AN

ADDRESS

TO THE

Medical Practitioners

OF

IRELAND,

On the subject of

COW POCK,

By SAMUEL B. LABATT, M. D.

Licentiate of the College of Physicians, and Secretary to the Cow Pock Institution, North Cope-Street, Dublin.

"——— *Quid tuta times? Accingere; & omnem*
Pelle moram."——— Ovid.

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MY situation as Secretary to the Cow Pock Institution, in North Cope-Street, having afforded me opportunities of knowing, that my countrymen have not received the invaluable discovery of Cow Pock, with the enthusiasm which has marked its progress in other countries, that it is not regarded by the profession with that interest to which its merits justly entitle it; and that the many works published concerning it have not pervaded our island to any considerable extent. I have determined to collect and circulate, with all possible diligence, a rapid sketch of what is

at present known, and at as cheap a rate as possible, in the hope of awakening the torpor hitherto so prevalent, and pointing out the imperious necessity there is, as well for the interest of the community as the honor of the profession, that all those engaged in the practice of vaccine inoculation should bestow a due attention upon the phænomena which it exhibits.

Those who have carefully attended to this disease will, I apprehend allow, that it is not so simple as represented; that much observation is necessary, and that cases will occur in which accuracy of discrimination will be found no less requisite than on many other occasions in medical practice.

To render this essay useful to gentlemen, who, though not of the medical profession, occasionally practice vaccine inoculation, technical terms have been avoided as much as possible.

The best plates which could be procured are annexed, exhibiting the different appearances of the arm, which attentively compared, with the progress and history of the complaint, will I hope, materially assist in discriminating the genuine Cow Pock.

If

If I shall contribute to remove doubts, to confirm the wavering, to assist in establishing the criterion of the genuine disease, and stimulate the exertions of others, to render the practice of vaccine inoculation more extensively useful through this part of the United Kingdom, I shall have fully obtained the object I had in view, and my labor will be amply compensated.

IN this age, teeming with invention, when more rapid advances have been made in every branch of useful knowledge than during any former period; the improvements in medicine have kept pace with the progress of other sciences.—Among these, the discovery of Vaccination is eminently conspicuous, affording a prospect of the most permanent advantages;—whether we regard it as healing the wounds of suffering humanity, or conferring the most essential national benefits, by increasing the resources of population.

One would be inclined to suppose, that the celebrated Dr. Boerhaave had some *presenti-*

ment of the Cow Pock, for in his Aphor. de cognoscendis & curandis morbis, he thus expresses himself.—"Correctio specifica niti debet invento remedio opposito illi veneno contagioso, quod tam parva mole susceptum reliqua parit, ut effecta (1382, 1383).

Quale (1390) inveniri posse, comparatio historiæ antidotorum, et indoles hujus mali, faciunt sperare; et ad indagandum impellit summa hinc futura humano generi utilitas."

The learned Dr. Mead wonders much how Boerhaave could be induced to hope that an antidote against small pox would ever be discovered; happily however for the human race, Boerhaave's hopes have not been frustrated.

That the Cow Pock, as a preventive of small pox, is entitled to the confidence of the public, must be allowed by every man who will take the trouble of being informed of one tenth part of the evidence which has already appeared in favor of this most invaluable practice, which according to the most moderate computation, enables us to preserve the lives of more than a million of our fellow creatures annually, in Europe alone!

"The

"The lukewarmness and indifference" (says Mr. Ring, in his very elaborate work upon this subject) "with which this improvement of the science has been regarded by a number of medical men, is truly astonishing. Had Jenner's book held out a prospect of gain, by describing a new disease, instead of proposing a prophylactic that was to cut off a lucrative branch of trade,—it is probable it would have been purchased, and read with great avidity."

The merits of this as well as of every other discovery in medicine, must stand or fall by the concurring testimony of the most learned and discerning men of the profession in every country, whom we must consider as best qualified to appreciate its value.—That such have given their decided sanction to the practice, will fully appear on a perusal of any of the numerous books which have been written upon the subject. Indeed I am of opinion with many others, that Dr. Jenner's work alone should be sufficient to convince all who are not determined to be sceptics.—It may be thought, perhaps, that Jenner, like a fond parent, was inclined to paint his offspring in the most flattering colours; ample experience,

ence, however, has confirmed the truth of his positions.—What stronger proof in favor of Cow Pock inoculation can be brought forward than that physicians of the first eminence, in every quarter of the globe use every exertion to promote the practice; that they adopt it in their own families, and that most of them absolutely decline inoculating with small pox?—Can it be supposed, that, in so doing, they are any otherwise interested, than for the good of society at large? certainly not; for it must be allowed that the abolition of small pox would necessarily close up from them and their heirs for ever, a fruitful mine of wealth.

Mr. Sutton, who practised small pox inoculation for almost half a century, acknowledges, that he has not been able to produce the disease in any of those who had had the Cow Pock;—and althought it cannot be supposed that any man would willingly give up a practice, by which for so long a time he gained a handsome livelihood, yet, with great candour has Mr. Sutton admitted the efficacy of Cow Pock, and practises it on several occasions.

The

The frequent reports of cases in which the Cow Pock has been supposed to fail in affording the promised security against small pox, has tended very much to impede its general diffusion in Ireland.—Since the introduction of vaccination into this country, having bestowed considerable attention upon it, and spared no pains in examining with impartiality these alledged failures, it affords me much pleasure to state, that on an accurate investigation, I invariably found them to originate either in ignorance, or absolute and wilful misrepresentation of facts, of which I could adduce some remarkable instances.

From the careless manner in which the new inoculation is performed by inexperienced practitioners, it is contrary to reason or common sense to expect, that adverse cases will not now and then occur.—But if it has been proved in a hundred thousand instances, or more, that Cow Pock inoculation is a certain preventive of small pox, how can a few solitary cases of reputed failure stand in competition with such an established law?—The inattention and ignorance of practitioners have often brought into discredit the most active and efficacious remedies; in no case has

has this been more remarkable than in the practice of vaccination, which some have presumed to commence without having ever seen the disease, or read a book upon the subject. That such people should be deceived as to the characteristics of the disease, can excite no surprise; and that their rash and inaccurate reports must lead to conclusions very prejudicial to the reputation of Cow Pock.

Although this disease be slight and the inoculation of it very simple, yet a previous knowledge of the complaint is not the less necessary.—Dr. O'Reilly, one of the most learned Physicians of Prague, in a letter to Dr. De Carro, of Vienna, observes, "that a spirit of observation is much more necessary in the inoculation of cow pock than in that of the small pox." And Dr. De Carro, himself, as well as most other experienced practitioners, is of the same opinion.—A correspondent of Mr. Ring, Mr. Erving, is fearful lest "the practice being so very simple, and the operation and effects of the disease so innocent, it may descend into the hands of the ignorant, careless and unwary, so as to defeat all the promised good effects, and leave the

the patient, by throwing him into a false state of security, in a more perilous situation from the variolous infection than he was at first."—When we reflect that every person who is able to hold a lancet, thinks himself capable of inoculating with Cow Pock, and that little attention appears to be paid to its investigation, we cannot but be astonished that more instances of failure have not happened.—Certain I am, that many points relating to this important subject may admit of farther elucidation; therefore every care should be taken in conducting the practice; and I would advise those who are employed therein, to keep an exact register of their inoculations, and to note with accuracy every circumstance that may occur in the progress of the complaint;—thus mistakes would be avoided, and facts collected, which might tend to throw some further light upon the laws of agency of vaccine matter on the animal œconomy.—To those who are about to commence the practice of cow pock inoculation, a strict attention to the following admonition of Dr. Jenner is particularly necessary.—"One of the first objects then, of this

this pursuit, as I have observed, should be, to learn how to distinguish with accuracy, between that particular pustule which is the true cow pock, and that which is spurious. Until experience has determined this, we view our object through a mist. Let us, for instance, suppose that the small pox and the chicken pox, were at the same time to spread amongst the inhabitants of a country, which had never been visited by either of these distempers, and where they were quite unknown before; what confusion would arise! The resemblance between the symptoms of the eruptive fever, and between the pustules, in either case, would be so striking, that a patient who had gone through the chicken pock to any extent, would feel equally easy, with regard to his future security from the small pox, as the person who had actually passed through that disease. Time and future observation, would draw the line of distinction; so, I presume, it will be with cow pox, until it is more generally understood."

The most zealous friends to small pox inoculation must allow, that under the best management it proves sometimes fatal, frequently danger-

dangerous, and apt to disfigure the body with lameness, ulcers, eruptions on the skin, blindness, &c. that it keeps up and spreads the contagion, and that in many instances it resembles, in its appearance and consequences, the natural small pox.—A discovery which obviates such evils is certainly the greatest which the annals of medicine can boast of.—Innumerable and decisive experiments made in all quarters of the globe by the most enlightened men of the profession, prove in the most satisfactory manner, that Cow Pock inoculation possesses all these advantages.

The knowledge of Cow Pock, and the belief of its being a perfect preventive of small pox, is by no means of modern date. By traditionary accounts we are informed, that it has been known centuries ago; this is necessary to mention, because many assert that it was never heard of till within these few years, and that therefore less reliance is to be placed on its prophylactic virtues.

It has been supposed that Cow Pock derives its origin from small pox passing through the cow, and that it may degenerate in the human body,

body.—The former opinion is still undecided, and although many experiments to communicate small pox to the cow have failed,* yet whether there be any original connection between the two diseases or not, the researches of the learned alone can determine.—The latter supposition has been proved to be groundless, it being ascertained that cow pock preserves its usual mild form with undiminished activity, through an indefinite series of inoculations in the human subject.—These opinions probably originated in the practice of inoculating persons with cow pock matter, at the small pox hospital, in London, where the disease produced was sometimes the small pox, and sometimes the cow pock, and often both combined. The same ill consequences may follow, by using the same instrument for both kinds of inoculation.

Before

* All quadrupeds, however, are not incapable of being infected with small pox. For according to the experiments of Citizen Bannier, a Veterinary Surgeon, at Chartres, in France, and those of Dr. Sacco, of Milan, it appears, that sheep, oxen, and dogs are susceptible of small pox. Dr. Sacco inoculated with small pox, five dogs, which had been previously vaccinated, but without effect. Hence he concludes that in quadrupeds, as well as in the human species, cow pock is a preventive of small pox.

Before I proceed to the more particular part of our subject, it may not be altogether uninteresting to take a concise view of the rise and progress of the Jennerian discovery.

In several dairy counties in England, about 15, a peculiar disease has from time immemorial been observed to affect the cows, hence vulgarly called the cow pock, or pap pox.—This disease generally appears in spring, and shows itself in irregular fiery pustules, on the teats and udders of the cows, which are of a palish blue or livid colour, and contain a thin acrid fluid.—The parts round the eruptions become hard, swelled and inflamed, and the pustules are apt to run into deep eroding ulcers, which prove very difficult of cure unless early attention be paid to them. The animal is sometimes considerably disordered; her appetite becomes impaired, and the secretion of milk is much diminished: the disorder, however, has not in any one instance proved fatal.—It has been said to affect the same cow frequently, but the subsequent attacks are much slighter than the first. This complaint is very infectious, not by means of contagious effluvia, but by the

contents

contents of the vesicles being carried from one cow to another by the milkers. Hence those cows only who give milk are infected with it. The disease is frequently communicated to the hands of the milkers, who thus become secure from ever after receiving the contagion of small pox.—In a few days after the virus has been applied, if the person be in a fit state to receive it, there may be observed upon the hands inflamed spots, which soon appear like small blisters, becoming at length large vesicles of a circular form, with depressed centre and elevated edges; they are of a bluish colour, and contain a transparent fluid.—In some days the parts surrounding the vesicles become swelled, hard and inflamed, and assume an erythematous appearance.—Pain and swelling of the axillary glands, and symptoms of fever supervene, which are commonly slight and transient, unattended by any eruption over the body.—The casual cow pock, however, is more severe than that communicated by inoculation, but whether this is owing to the number of vesicles, or to the structure of the parts they occupy, I cannot pretend to say; possibly

both

both these circumstances may tend to aggravate the disease.—In a few days at the utmost the constitutional symptoms disappear, but the vesicles frequently run on to troublesome ulcerations, which however are relieved without inflicting any permanent injury.—When the disease is far advanced in the cow, it produces on the milkers inflammation and ulceration, which are not the genuine cow pock.—It should also be mentioned, that persons have been affected from milking cows with eruptions on the hands and arms, attended by general indisposition, and yet have taken the small pox afterwards; from which we learn that these animals are affected with eruptions, which possess no antivariolous power. Great caution is necessary to distinguish them from the disease in question.—They are much milder; are without the bluish or livid tint which characterizes the genuine cow pock; the surrounding inflammation, if any, is much less, they are not by any means so infectious, and they never put on a phagedenic appearance, but quickly end in scabs.

As the cow pock protects the constitution against the action of small pox, so the latter

prevents a person from taking the former. So well known is this fact through the dairy countries in England, that when the disease breaks out among the cows, assistants are procured, if possible, who have had the small pox, otherwise the business of the dairy could not be carried on. Sometimes, however, *local* pustules appear on the hands of those who have had the small pox, which are attended with much uneasiness.

It does not appear that the antivariolous power of cow pock was very generally taken notice of in England, till after the introduction of small pox inoculation; before this time a knowledge of it was chiefly confined to cow doctors, farmers, &c. who did all in their power to keep its existence a profound secret, lest it should hurt the character of their milk.

When the inoculation for small pox was first practised in England, most of the practitioners engaged in it frequently experienced disappointment in communicating that disease by inoculation or otherwise, and they constantly found, that those who thus resisted the infection had previously had the cow pock.

About

About 44 years ago, three surgeons in England, Messrs. Fewster, Grove, and the celebrated Sutton, formed a connection for the purpose of inoculating for the small pox. In their practice which became very extensive, they found that a great number of patients could not be infected, notwithstanding repeated exposure under the most favourable circumstances. At length the cause of the failure was discovered, by the case of a farmer whom they could not infect with the small pox, though he assured them that he had never had that disease, but told them that he had had the cow pock. This fact incited the gentlemen to enquire into the particulars of those cases in which they could not communicate the small pox, and they found that all the patients who resisted the infection of that disease had laboured under the cow pock at some period or other of their lives.—The result of their observations on this head, in an ample experience, during many subsequent years, was invariably the same.—And many other gentlemen extensively engaged in variolous inoculation have since discovered, that their want of success in infecting patients with small pox, proceeded from the same cause.

In the year 1780, a young woman who some years before had taken the cow pock while milking cows, being desirous to know whether that circumstance would secure her from the small pox, went to the Small Pox Hospital, in London, where she was inoculated, and exposed in all possible ways to the contagion, yet did not take the disease.

A man who had had the cow pock several years before, went to the Hospital, and was inoculated with small pox, he remained there in the very midst of contagion for several weeks, but did not take that disease.

Forty-eight years ago a farmer who lived in Wiltshire, when he was going to London, being asked whether he was not afraid of the small pox, replied—no,—for he had had the cow pox.

In a letter dated from Axminster, April 12th, 1802, from Mr. Nicholas Bragge to Sir William Elford, Baronet, we find the following communication. "It is now more than thirty years ago that I first made experiments, and proved that the vaccine disease was a preservative against the small pox, and it is I believe

believe more than twenty years ago, that through the Rev. Herman Drew, I acquainted Sir George Baker, Baronet, with the observations and experiments I had made. It is twenty years ago that Mrs. Rendall, the wife of a respectable farmer in the parish of Whitechurch, near Lyme, in Dorsetshire, inoculated herself and three or four children for it; *and those children who have long since arrived at manhood, have inoculated their friends and neighbours whenever an opportunity has offered.*"—Many communications of a similar nature may be found in the Report of the Committee of the House of Commons, on Doctor Jenner's claims.

In the year 1767, a butcher near Bridport, æt. twenty, being informed that if he would allow himself to be inoculated with cow pox, it would preserve him ever after from taking the small pox, with which he had not been previously affected, was accordingly inoculated by a needle in two or three places on the hand. In eight days the parts inflamed, his hand swelled, his head ached, and other symptoms of fever came on.—He was afterwards inoculated for small pox several times, and exposed in every way to it, but did not take the disease.

About eighteen years ago, when there was a general inoculation for the small pox, at Wincanton, in Somersetshire, a young woman was twice inoculated without effect. The failure she attributed to her having had the cow pock some years before.

Mr. White of Bath, in a letter to Mr. Creaser of that city, mentions the case of a labouring man, who about twenty-four years ago, being then a farmer's boy, had the disease communicated to him in a frolic, upon a small scratch in his hand, by one of his fellow servants, who had gotten it, by milking a cow. He has since been repeatedly inoculated without effect: his family have had the inoculated small pox around him, and he has more than once been exposed to the most malignant species of that disease without any sort of effect being produced upon him.

In some parts of this kingdom, particularly in the county of Cork, the cow pock, under the name of *Shinach*, has for ages been esteemed a perfect preventive of small pox; so much so that old women have been in the habit of bringing children to the neighbouring dairies to have them infected with it.

Dr.

Dr. Barry of Cork gives many instances of persons having had the cow pock more than fifty years ago; and informs us that one woman, æt. eighty, asserts that as long as she can remember, an opinion prevailed, that those who have had the cow pock cannot take the small pox, and that people purposely exposed themselves to the former under that persuasion.

A gentleman from the county of Wexford lately informed me of three women, who thirty years ago, in consequence of milking cows affected with sore nipples, were attacked with considerable inflammation of their hands, attended with much pain; they were then very young, and never had the small pox, and although they were repeatedly since exposed to its contagion, they did not take the disease. Some time ago on reading an account of the cow pock, as affecting the hands of the milker, they immediately recollected the similarity between it and the disease they formerly took from the cows, and are now satisfied that it was the cow pock they then laboured under

der, and that their escaping the small pox ever since is to be attributed to that circumstance.—A fourth woman engaged in the same dairy, (who previously had had the small pox) did not take the disease though she repeatedly milked the cows ill of it.——While writing these sheets I have been favoured with a letter from the same gentleman, by which I find that the cow pock has been long known in Wexford and the adjoining counties, where it is called *punthans* or *puncthane*, and is esteemed a certain preventive of small pox: it has also been observed among the cows in the neighbourhood of Dublin.

Cow Pock, has likewise been discovered in the Dutchy of Holstein (under the name of *finnen*) and in other parts of Germany, and it is said that children have been long since inoculated with it in that part of the world, to preserve their beauty. Dr. Sacco, of Milan, has found it to exist in Lombardy. Dr. Waterhouse of Cambridge, has informed Dr. Jenner, of its existence in several parts of America, where its antivariolous power is not unknown. In many parts of France also it has been discovered, as we are informed by Dr. Moreau, from whom we also learn, that

that several persons inoculated with virus discovered at Milan, proved unsusceptible of small pox. M. Tournier, first surgeon of the military hospital at Brussels, says, that it exists among the cows in Belgium, and that the peasants of Campine have assured him, that it attacks the cows in those places, and that such persons as take it are thereby rendered unsusceptible of small pox.

The first allusion to cow pock on record is noticed by Dr. Jenner, in a letter to Mr. Ring, "When the Dutchess of Cleveland" said he, "was taunted by some of her companions, that she might have to deplore the loss of that beauty which was then her boast. (the small pox at that time raging in London) she made a reply to this effect: That she had no fears about the matter, for she had had a disorder, which would prevent her from ever catching the small pox." The author from whence this intelligence was derived, could not be recollected, but Dr. Jenner is disposed to believe that it alludes to cow pock.

In a weekly paper published at Gottingen, in 1769, we find the following communication. "The cow pock is not uncommon in the

the neighbourhood of Gottingen, it is true, that neither men nor animals die of this disease, though it is said to be pretty severe in some persons, which may be ascribed to our climate being colder, and thus rendering the poison less venomous and dangerous: on this occasion I shall mention, that people in the country near Gottingen, who have had the cow pock, flatter themselves that they are by it quite secured from the infection of our common small pox, as I have, upon accurate inquiries, frequently heard from creditable persons." This paper is signed "an experienced husbandman."

Notwithstanding these and many other facts of a similar nature (which may be found in the works of Jenner, Woodville, Pearson, Ring, &c.) the cow pock remained for the most part unobserved by medical men, till Dr. Jenner* the distinguished author of this

* Accounts of the casual cow pock had however been published prior to this period, for besides those already alluded to, we have the following. "The cow pock is a disease well known to the dairy farmers in Gloucestershire.—What is extraordinary, as far as facts have hitherto been ascertained, the person who has been infected is rendered insensible to the variolous poison." *Vide Adams on morbid poisons*, 1795.

"I have learned from my own observation, and the testimony of some old practitioners, that susceptibility of the small pox is destroyed by the cow pock, a disease from cows, which is a malady more unpleasant than dangerous." *Vide Beddoes Queries*, 1796.

this grand improvement in the healing art, astonished the world in the year 1798, with his very interesting "*Inquiry into the causes and effects of the Variolæ Vaccinæ, &c.*" This accurate observer, by a well directed course of experiments, proved the inestimable advantages which society were to expect from cow pock, by applying it to the purpose of inoculation: and also that it may be communicated *ad infinitum*, from one human subject to another, without losing its antivariolous property,* and that thus a general inoculation for cow pock would supersede the small pox, and eventually banish that most pestiferous disease off the face of the earth. He inoculated several persons with small pox, who had previously undergone the cow pock, some 30 and even 50 years before, but they all resisted the former disease. The perfect mildness of the cow pock has likewise been proved by Dr. Jenner, and also that it is not contagious by effluvia.

No sooner was this discovery promulgated, than it attracted the attention of the most eminent of the faculty; trials were instituted with

* The infection now used at the Vaccine Pock Institution, in London, was furnished by Doctor Pearson, in 1799, of course it must have gone through several hundred constitutions, but does not appear to be changed in its effects.

with impartiality in all quarters, to determine the truth of Dr. Jenner's positions: thousands of those vaccinated were inoculated with small pox, and exposed to it in every possible way without effect; they were put to sleep with children ill of the disease, made to wear their clothes, and many were wrapped up for hours in sheets, which had just been taken off the beds of patients labouring under the most confluent small pox, but all escaped. These trials proved highly flattering to Dr. Jenner and his discovery. Names without number were daily added to the list of converts to the new practice, and testimonials in its favor were pouring in from all parts; still however it was not to be expected that the Jennerian discovery, should unlike all other innovations, escape the effects of scepticism, interest and prejudice: plots were therefore perfidiously contrived, vague reports and absolute falsehoods industriously circulated, and every artifice devised to injure it in the minds of the public. Happily however for millions yet unborn, these base subterfuges, by promoting a spirit of enquiry, established the truth of a doctrine which it was their object to nip in the bud.

"It has been remarked in surgery, and in other practical professions, that attempts at improvement

improvement are considered by timid persons as hasty and unwarranted innovations: this caution, when properly limited and applied, may answer a good purpose; by inducing men qualified for the task, to examine with accuracy and deliberation, into the improvements proposed, and prevent the obtrusion of those which will not bear the test of rigid enquiry. For a man to condemn or approve hastily, without a previous knowledge of the subject; nothing else is required than a common stock of prejudice; but to form a correct and independent opinion, sometimes calls for more judgment and firmness than many possess; and to appreciate the treatment recommended for an intricate disease, demands greater opportunities and skill, than fall to the lot of every practitioner."

All new discoveries which tend to overturn long established theories must have the same difficulties to contend with, in no case was this more remarkable than with respect to small pox inoculation, which, when introduced into England, had many enemies to encounter: exertions were made use of in the pulpit, to deter the public from adopting it; such opposition was excited, and such outcry raised against

against it, that it absolutely fell into disuse for some years. It was not countenanced by the college of physicians for more than 30 years after its introduction. The cow pock has met with a much more favourable reception, for no sooner were its merits made known by Dr. Jenner, than the most eminent men throughout Europe turned their attention towards it; and I may now state with confidence, that there is not to be found a man, who, being entitled from a careful examination of the subject, to advance an opinion upon it, is not a decided friend to the practice.

In the infancy of vaccination, as well as in that of every other similar discovery, mistakes must occasionally be expected, until we become perfectly acquainted with its true character, &c. Whoever will take the trouble of looking into the history of small pox inoculation, will find many more cases of failure recorded than have been attributed to cow pock: yet we do not find that the efficacy of small pox inoculation is now called in question. The celebrated Tissot, we are informed, having inoculated a favourite child, was satisfied with the appearances which followed, and therefore objected to a second inoculation, unfortunately however,

however the child afterwards took the small pox in the natural way, and fell a victim to it. In a pamphlet published in the year 1746, by a Doctor Pierce Dodd, of London, we find two or three remarkable cases where the small pox was said to have appeared in the same person twice, viz. after inoculation pustules came out to the number of from 60 to 100, they maturated and scabbed regularly: however, in two or three years afterwards being exposed to the infection, they again took the disease, and had a copious eruption of pustules, which likewise maturated and scabbed regularly.

Mr. Ring mentions a gentleman who inoculated the inhabitants of two or three villages, with variolous matter, as he supposed, in consequence of which an eruptive fever and a mild form of disease resembling small pox made its appearance at the usual time: but after these people had been well some months, one half of them nearly took the small pox by contagion, and some had it very unfavourably. He quotes, from the memoirs of the Medical Society of London, a similar instance of failure. I myself, have met with such cases.

A respectable

A respectable country practitioner, (of many years experience in the practice of inoculation) infected two children, sons of a particular friend and relation of his, with small pox, as he supposed, and which he was satisfied they took and went regularly through. Some time afterwards these children were brought to Dublin, where they were attacked with fever followed by an eruption, which the physician who was called in, pronounced to be the small pox: the possibility of this being the case was denied by the father, who assured the Doctor that they had already been inoculated, and had had the disease in a satisfactory manner: this report was confirmed by the practitioner in the country, who alledged that the subsequent complaint must be the chicken pock, it proved however to be the small pox, and of a very bad kind. Now is it not more reasonable to attribute these failures (and many more of a similar kind, which are recorded) to some mistake in conducting the inoculation, than to suppose that the persons had the small pox twice? and may not the same mode of reasoning be applied to the supposed failures of cow pock?

Since

Since the year 1799, vaccination has been very extensively practised throughout England; public institutions have been opened in London, and most of the principal towns for the purposes of inoculating gratuitously all those that should apply, and of supplying practitioners in distant quarters with cow pock matter. Exclusive of the exertions of medical men, the Clergy in several parts of England have done much to disseminate it, as well by recommendatory exhortations from the pulpit, as by inoculating many thousands themselves in their respective parishes.

In many towns in Scotland also, institutions have been opened for the new inoculation.

Its diffusion has not been so universal in this country till lately; there is strong reason, however, to hope, that it will soon be as extensively disseminated in Ireland as in Great Britain. In Dublin, and in many of the large towns, it has been practised at the Dispensaties, and several Hospitals.

In the year 1799 cow pock inoculation began in Germany, where it was patronized by the Emperor, who gave silver medals to six parents in Alsace, who consented to have their chil-

dren vaccinated. Dr. Stromyer commenced the practice at Hanover, in the spring of 1800. Among his patients were many children of the nobility; and numerous applications were soon made to him for vaccine matter. Dr. Ballhorn was also extremely active. From Hanover it found its way to Vienna, where the enquiry was prosecuted with great industry, by Dr. De Carro of that city. At Leipsic, Dresden, Berlin, Dusseldorf, and other cities in Germany, the new practice soon became, through the exertions of these gentlemen, very generally adopted. Dr. De Carro gives us an account of the establishment of it in Bohemia, and of Dr. De Vest's successful introduction of it into Carinthia.

Early in the year 1800, vaccination commenced in France, with virus, sent from London; of 30 inoculated 9 took the disease, and had it in the most regular manner. A committee was appointed, and subscriptions entered into, to defray the expence of experiments, instituted to ascertain, whether cow pock possessed the advantages attributed to it by Jenner and the English physicians; with

with the same view an Hospital was opened for vaccine inoculation, the year following: And after a most impartial investigation of its merits, it was found to be fully entitled to the encomiums bestowed upon it. In this decision the schools of medicine, the learned societies, and the most enlightened practitioners throughout France, entirely coincided: its progress throughout that country was, in consequence, rapid beyond expectation, which has been in no small degree accelerated by the exertions of the Magistrates and Clergy.

Spain has availed herself also of this important discovery, where it has long been practised under the immediate sanction of Government. And in Portugal it has found a zealous advocate in Dr. Dohmeyer, of Lisbon.

In Switzerland, Italy, and Hungary, the practice has become general, and even the Turks who were averse to small pox inoculation, have, by the adoption of cow pock surmounted their most inveterate prejudices.

Dr. O'Dier inoculated 600 persons at Geneva, where small pox raged epidemically with such violence, that 250 fell victims to it in a short time: all his patients escaped, though they kept up a constant intercourse

with those ill of the small pox. The progress of vaccine inoculation has been much promoted in the Italian Republic, by the exertions of Government, who ordered that a proclamation recommending it should be read by the Clergy from the pulpit. At Milan it has been practised in every parish, and even in the churches.

A successful inoculation at Moscow, in 1801, happily introduced it into Russia. The child who was the subject of inoculation being by order of the Empress Dowager, christened Vaccinoff, and a pension settled upon her for life. She was immediately carried to St. Petersburgh, and placed in the foundling hospital, as a source of future infection, which has been propagated throughout the whole extent of those vast Dominions. The Empress sent Dr. Jenner a diamond ring, accompanied with a most flattering letter.

Sweden and Denmark have fully participated in the benefits of vaccination.

It was well received by the King of Prussia, who ordered that all those of the Prussian army who had not had the small pox, should be inoculated with cow pock; he also submitted his own children to vaccination: the practice

tice has now become very general in that country.

In August 1800, Drs. Marshall and Walker, introduced it into Gibraltar, where they met with a most favourable reception from Governor General O'Hara, who had his own infant immediately vaccinated; the soldiers of the garrison and their children, who had not had the small pox, were also inoculated, all of whom had the disease in its usual mild form.—From thence the practice was disseminated through most of the islands in the Mediterranean, particularly Minorca, Malta, and Sicily, in all of which the people were so favourable to it, that it soon became general. At Palermo, an hospital exclusively dedicated to vaccination, was opened in 1800, in which city the small pox proved fatal in that year to 8000 persons, but did not make its appearance the year following, after Dr. Marshall had vaccinated 10,000.

It was to be expected that vaccination would soon extend beyond the limits of Europe: it crossed the Atlantic, and made its way into America and the West India Islands. In November, 1801, three hospitals were opened in

in America, *viz.* at Rochester, at Franklin, and at Westford. In these, experiments were made to ascertain the antivariolous power of cow pock, the result of which were most satisfactory. We are informed by Dr. Waterhouse of Cambridge that he, under the patronage of President Jefferson, a great advocate for cow pock, has long since established it in Virginia, Kentucky, Columbia, and the cities of Washington and Philadelphia.

Dr. Rush, writing to Dr. Lettsome, in 1802, states, that Dr. L's publication on vaccination had very much contributed to spread the knowledge of it through the United States, and that the only obstacle to its universal adoption was the scarcity of virus, which difficulty, however, was daily lessening.

Dr. De Carro informed Dr. Jenner in 1803 that matter which was sent by him to Bagdad and Bussora, had succeeded under the direction of an English physician at the former, and an English surgeon at the latter place; and that from thence it was forwarded to other parts of Asia. From Bussora it was also transmitted, *via* Constantinople to Bombay, and fortunately excited the disease there

after

after many abortive attempts with virus sent from Europe to India by water carriage.—In the Bombay Courier, for July, 1802, was published, an account of the introduction of vaccination into India, to the great joy of the inhabitants. The government of the Presidency have given every assistance towards its dissemination.—It was much indebted for its rapid progress there, as we are informed, to a testimonial to which in 1803, Mr. Ring obtained the signatures of a vast number of the most respectable medical practitioners in London.—This was inserted in the daily prints, and so found its way to India, where it put an immediate stop to all controversy upon the subject.—A late German print contains the following article, taken from the Vienna Court Gazette:—"According to late intelligence received here, by Dr. De Carro, from the Governor, and several physicians of Bombay, it appears that the vaccine inoculation is generally adopted in all the British settlements of India.—The neighbouring Asiatic princes vie with each other in procuring the cow pock matter, in order to propagate it in their respective states; and accounts, it is expected also,

also, will soon be received of its introduction into Tartary. An article in the Bombay Gazette mentions, on the authority of an Indian manuscript belonging to one of the Native Princes, that several Brahmins have been long ago not only acquainted with the cow pock, but also with the art of inoculation by it; and that they perform this operation by means of an impregnated thread; but that the practice, however, is by no means common, because the Brahmins only inoculate the children of such parents as worship Bhowang, a goddess, whom they believe to be the protectoress of those labouring under the small pox. This goddess is commonly represented riding upon an ass: the father or guardian of the child to be inoculated brings her an offering consisting of corn, which he allows an ass to eat from off his bosom. The ceremony is repeated as soon as the cow pock begins to appear.—The Governor of Bombay, Mr. Jonathan Duncan, has sent this manuscript, accompanied with a suitable letter to Dr. De Carro, with a present of two valuable shawls, and three pieces of muslin of exquisite beauty for the Doctor's wife." By late official communications from the medical superintendant

General,

General, in Ceylon, we learn that upwards of 21,000 were vaccinated there in the short space of eighteen months. From the same source we are informed of the great success of vaccination in Sumatra, where the ravages of small pox were occasionally very great.

The following statement has been lately transmitted to the Royal Jennerian Society, from Madras:

"*General abstract of persons vaccinated by different medical gentlemen, and by native practitioners, at this Presidency, and at the subordinate stations subject to the authority of this Government, from September* 1801, *to April* 1804, *without any casualty.*

"Europeans, 165. Brahmins, 441. Malabars, 41,806. Gentoos, 40,036. Mahometans, 10,926. Half Casts, 444. Portuguese, 1092. Pariahs, 35,975. Marahatees, 440. Cannadies, 10,367. Rajaputt, 462.--Total 145,840.

Signed by Order,

Fort St. George, July 28th, 1804.

G. BUCHAN, *Chief Sec.*

I shall now consider the subject in a practical point of view, as divided into,

1. *Local*

1. *Local appearance and progress of inoculated cow pock, under its most perfect form.*

2. *Remarks on its several stages, and the minute differences which are commonly observed therein.*

3. *Varieties frequently observed, but which are not incompatible with the genuine disease.*

4. *Deviations of greater magnitude, or suspicious cases.*

5. *Distinctive marks of spurious cow pock, with suggestions of some of its probable causes.*

6. *Constitutional symptoms.*

7. *Inoculation.—The mode of conducting it, and circumstances to be attended to in the state of the patient, and the medical treatment of the complaint. The best modes of preserving the virus.*—And I shall subjoin some remarks on cow pock, compared with small pox and other eruptive diseases, and conclude with a few general observations.

1. *Local appearance and progress of inoculated cow pock, under its most perfect form.*

About the third or fourth day, that, on which the operation was performed, inclusive, a small red pimple, with an inflamed base, appears, and on passing the finger over the inoculated part a degree of hardness may

may be felt. On the fifth day a vessicle is formed, of a light pink tint, often with a shade of blue, which gradually changes to a pearl colour; the vesicle continues to enlarge, developing its characteristic appearance, until the eighth day, *viz.* spreading, yet preserving a shape perfectly circular, if the operation was performed by puncture, or oval if by scratch; it goes on increasing in size until the tenth or eleventh, when it usually arrives at its acme, its diameter being about two or three tenths of an inch.—About the ninth day an erysipelatous efflorescence appears, denominated the *areola*, which gradually extends from the vesicle as a centre, to the size of a crown piece, of a pink or rose colour, and of a deeper hue the nearer the vesicle, gradually shaded off into the surrounding skin, upon the surface of which it seems to lie, as has been well remarked by Dr. Cappe, of York. This inflammation advances with the progress of the vesicle, and arrives at its height at the same time.—It is accompanied with a considerable degree of tension and hardness, which is greatest contiguous to the vesicle. Some

degree

degree of hardness may often be felt in the skin before any areola is observed.—When fully formed the pustule appears very turgid, still, however, preserving the central depression, and its colour becomes darker, approaching more to blue or purple. The areola acquires a deeper hue, its margin being regular and well defined.

After remaining nearly stationary for a day or two, the areola fades away, generally commencing from the centre, so as to leave a florid ring corresponding with its margin, but which also soon disappears.—The hardness declines with the areola; a crust which had begun to form in the centre of the vesicle about the ninth day, extends gradually to the circumference, becoming darker as it increases until in a few days the vesicle is converted into a hard, glossy, and semitransparent scab, of a deep mahogany colour, which exhibits a concave surface like the vesicle itself. This adheres firmly for ten days or a fortnight, and when fallen off, a circular or oval pit is left, which remains for life, and is very characteristic of the genuine disease.

2. *Remarks*

2. *Remarks on its several stages, and the minute differences which are observable therein.*

In the first period, nothing peculiarly appropriate to cow pock can be observed in general, except that upon puncturing the part, a colourless fluid will be discharged.—If we view a pustule at an early period, through a glass, we shall sometimes observe it to be composed of minute vesicles, at first distinct, but which soon run together and produce one well defined pustule.—When fully formed, the vesicle exhibits a reticulated appearance, with a dark spot in the centre, and the contained fluid will be found perfectly pellucid: at a more advanced stage it acquires some degree of viscidity; still, however, it will be limpid.—As the matter is supposed to be contained in cells, we are directed to puncture the vesicle in several places. Having repeatedly exhausted one by a single opening or two, I am inclined to believe, either that the internal structure is not cellular, or that the cells communicate.—The size of the vesicle varies from one tenth to six tenths of an inch, and the quantity of lymph is very different, even in vesicles of the same age and size. What influence this circumstance may have upon

upon the *quality* of the virus, I cannot pretend possitively to say, but from my experience hitherto, I am much inclined to believe, that *cæteris paribus*, the smaller the quantity, the more active it will be found, and *vice versa*. Mr. Bryce of Edinburgh makes the same remark.—From a pustule which discharged an uncommon quantity, the greater number of inoculations failed.—At Reigate Poor House, however, of eighty-eight patients infected from one pustule, seventy-nine took the disease; this must be considered a very rare instance, and it seems to me probable, that from the irritation produced by puncturing the vesicle, the discharge of a fluid little else than mere serum may be promoted, after the genuine virus has been evacuated. Hence for the same reason, it would appear, that the matter which issues first should be the most active. The probability of this being the case was first suggested to me by Dr. Clarke of this city.

The hardness which surrounds the base of the pustule is not remarkably perceptible, during a regular course, until after the seventh day, or perhaps later, nor should there be any considerable redness; the skin immediately contiguous

ous having at that period rather a milky white appearance. The blue shade which the surface of the vesicle presents, has been alledged by some to be a discriminating mark of the *casual* disease, and therefore to be particularly wished for in the inoculated. Dr. Woodville is of this opinion; yet a case which occurred to himself shewed that the irritable and vascular state of the parts, and exposure to the air, were the sole causes of the difference; having inoculated a man, in the arm and also in the hand, the vesicle on the latter was more livid, and accompanied with a higher degree of inflammation. Mr. Ring has corroborated this opinion; I had more than one instance myself of the fact, and besides, the blueness is sometimes wanting in the casual cow pock. When the disease has reached its acme, it has been compared by Mr. Bryce, and not unaptly, to a round body like a worm, coiled up under the skin.—The patient now complains of stiffness, slight pain, and heat in the part; and there is sometimes such an itching that children can with difficulty be restrained from scratching off the pustule. We shall hereafter find, however, that this symptom is much more frequently observed in the spurious disease.

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The areola is formed earlier in infants than in older children; it at times terminates abruptly, instead of the shade becoming gradually fainter as it recedes from the vesicle. Looking stedfastly on it for any length of time one may sometimes see transient blotches of white through it. On its decline occasionally two or more concentric circles are remarked, which some consider as a very favourable appearance, and as the redness passes away, a shade of yellow often succeeds.

The scab seldom falls off sooner than the time before stated, but often remains longer; it falls off at once, adhering very firmly 'till then, and has been aptly compared in form and appearance to the section of a tamarind stone. After it is perfectly formed and the areola quite gone, a second areola has been known to appear, less extensive and with less hardness in the skin, which I suppose to arise from the irritation produced by the scab: it disappears in a day or two.

3. *Varieties frequently observed, but which are not incompatible with the genuine disease.*

The hardness on the inoculated part is often perceptible before any inflammation appears, which generally affords a favourable prognostic.

prognostic. The small pimple at times, appears earlier than the third day. The vesicle occasionally is perfectly characterized on the fourth day, and very often on the fifth: if in all other respects it afterwards proceeds regularly, the antivariolous security will be afforded.—Sometimes the vesicle at the beginning, especially in adults, resembles a phlegmon, and will not put on the regular appearance until the eighth or tenth day; then, however, the depression and dark spot in the centre become evident, and the disease proceeds regularly. I have met with several cases in which it was impossible to decide sooner than the tenth day; I saw it dubious until the twelfth in one instance. Particular attention to the formation and falling off of the scab will assist our judgment very much in such cases. The disease, as already mentioned, arrives at its acme on the tenth or eleventh day;—frequently, however, it postpones two or three days.

The colour of the vesicle varies from an opake white, to a straw, or deep blue, approaching to black. This is of little moment,

provided the fluid be found perfectly colourless and transparent; the degree of exposure to the air has much effect upon it. The areola is alledged frequently to be wanting, and that it is not indispensible in the genuine cow pock, which opinion is confirmed by the experience of the Vaccine Pock Institution, London, by Mr. Ring, Mr. Fournier, of Brussels, Dr. Colon of Paris, and of many others. I have seen the areola very faint, but never entirely absent. Sometimes it spreads to a great extent upon the arm, reaching to the shoulder and elbow; this has an alarming aspect, but is not attended with any danger, and with very little pain in proportion to its appearance: it remains only a day or two. It occasionally is tardy in forming, and remains longer than usual.

The cow pock has, in some instances, lain dormant in the system for several days.—I have met cases where no inflammation occurred until about the twelfth day.—Mr. Bryce has known it deferred for a fortnight.—Mr. Ring, in one instance, saw no appearance before the forty-sixth day.—And the Vaccine Pock

Pock Institution record a delay of five or six weeks: but in six days after a second inoculation, a pock appeared at the former incision, and both proceeded alike.—In all these cases susceptibility of small pox was found to be destroyed, and patients infected from them had a regular disease. When a second inoculation is to be performed, under such circumstances, I would advise not to take the same arm, lest extensive inflammation be the consequence.

The vaccine disease sometimes suffers a suspension of progress. The inflammation in such cases generally appears earlier than otherwise it should; then disappears, or remains stationary for a time, and afterwards resumes its course. Mr. Ring inoculated a patient at eleven o'clock, A. M. an inflammation arose on the arm the same evening, which almost entirely disappeared on the fourth day, when a true vaccine pustule formed, the disease proceeded thenceforward as usual, and afforded a copious supply of active vaccine virus.—On the arm of a child inoculated by Dr. Boyton, of this city, the usual marks of the

 infec-

infection having taken place, were perceived on the third day: on the fifth they disappeared. On the fifteenth he visited the child, and found a well marked pustule, similar to that usually produced on the eighth day after inoculation.—Mr. Ring, Dr. Sacco, of Milan, and others, record cases, in which a spurious pustule appeared soon after inoculation, which increased for two or three days, then diminished, so as to be nearly gone on the fifth or sixth day when the true pustule appeared on the same spot, and ran its course without interruption.

When all the previous appearances have been well marked, it will occasionally happen that at the scabbing period, pus shall be formed.—Some imagine that the vesicle always undergoes such a change, I am convinced, however, that this opinion is erroneous, having repeatedly opened pustules to ascertain the fact, and only remarked that the fluid was more viscid. When any pus is contained, it is probably the effect of local irritation. If the scab be torn off, or mechanically injured, an ulcer is often formed, which frequently, especially in scrofulous constitutions, proves difficult of cure.—At a late period a ring of clustered vesicles may sometimes be observed around

around it, more transparent than the original vesicle, and containing a limpid fluid.

Dr. Depuyten (President of the anatomical department of the School of Medicine at Paris) thinks that the disease observes a shorter period in blacks, than in white people, which he attributes to the thinness of their cuticle,—and Dr. Marshall is inclined to adopt his sentiments.—Dr. Coxe, of Philadelphia, however, says he could never remark any difference between people of different colour, in that respect; and certainly we do not find that its progress is accelerated in children whose skin is less dense, than that of adults.

Cæteris paribus, temperature has probably some influence on the vaccine.—In summer, the disease often proceeds faster than in winter; and we are informed by Dr. Sacco, that the pustule on the cow in Italy, resembles more that produced by inoculation on the human subject, in these northern regions:—yet virus received from thence, occasioned no perceptible difference, when used in England.

Whether eruptions partaking of the vaccine character,—or resembling small pox, are to be enumerated or not, among the occasional symptoms of cow pock, is a question not yet

yet satisfactorily decided, and which time and farther experience can alone determine. Dr. Odier, of Geneva, relates a case of general eruption of vesicles, containing a fluid as clear as water, and each surrounded by a small areola: matter taken from them produced a disease of the usual kind without any eruption.—Dr. De Carro vaccinated a child affected with *Tetters;* these sores soon assumed the appearance of cow pock vesicles, and when they had run a regular course, the original disease was cured.—He had another patient labouring under *Crusta lactea*, on whom vaccine inoculation having taken effect, a copious eruption appeared on the sore parts; on the back where a blister had been applied, and on the scrotum, where it was excoriated by the urine, but none where the skin was sound the event was favorable. When there are any small pimples in the neighbourhood of the inoculated part, they have been known to assume a similar appearance.—Dr. Adams mentions some instances of eruptions at Madeira, one of which, however, seemed to acknowledge, as a cause, the peculiar management of the patient. When the person has been exposed to a variolated atmosphere, as happened

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at the Small pox Hospital in London, pustules, apparently variolous, have been remarked to break out.—And if the virus has been transferred to other parts of the body, by scratching the inoculated part, adventitious vesicles will sometimes arise; an instance of which is given in the Medical and Physical Journal, vol. ii. p. 306; there appeared on the labia pudendi, a confluent eruption of vaccine pustules.—A similar vesicle was observed on the same part, and from the same cause, by Dr. Ferguson, of this city. And I saw two cases, where pustules were thus excited on the under eye-lid, the areolæ of which extended over the anterior part of the eye, producing much pain and intolerance of light, which however, soon disappeared.

The change produced on pimples in the vicinity of the place of insertion we may justly infer to proceed from sympathy;—where the cuticle is abraded, it is natural to suppose that general irritation may act with peculiar effect, and when sores or other diseases are present, analogy warrants us to expect, that a different constitutional affection supervening, should either supersede them entirely, or considerably

ably modify their appearance.—Dr. Odier's case affords less room for conjecture; yet, it by no means follows, that the eruption was a constitutional affection, because in others, a genuine disease was propagated from it, as we shall have occasion to shew at more length hereafter.—And I am very confident that future investigation will trace these eruptive cases to adventitious causes, which have hitherto been overlooked.—Certainly eruptions are by no means usual concomitants of this disease.—In upwards of 10,000 persons vaccinated by Dr. Jenner and his relatives no such occurrence took place.—In several hundreds whom I have inoculated at the Cow Pock Institution, in this city, and in private practice, I never met with a single instance of them, except as above mentioned; nor have such been observed in the private practice of any of the gentlemen who superintend that Institution, nor in that of many other professional men whom I have spoken to on the subject.—I have indeed frequently seen a rash, much like red gum, appear on the arm, and sometimes over the whole body, a few days after inoculation, which, however, was

of

of short duration—I think it is more common in warm weather.—It is fortunately agreed on all hands, however, that if the inoculated part preserves its regular appearance and periods, these contingent circumstances affect not the specific properties of the cow pock.

4. *Deviations of greater magnitude, or suspicious cases.*

If a considerable tumor and redness appear on the second or third day, the inoculation will generally fail.—Dr. Woodville judiciously remarks, that when the inflammation advances rapidly to suppuration about the sixth or seventh day, producing a festering or crustaceous sore, the case is not to be depended upon ; early and violent inflammation is one of the most inauspicious appearances at all times.

In some cases a large pimple only, like a gnat bite has been excited, which remained the usual time.—In others an irregular shaped pock, followed by a yellow, rough, large irregular scab has been produced.—In one a pock resembling a mulberry was formed.—The pustule has been broken at an early period

riod, though perhaps it may afterwards have pursued its regular course; could we be certain that when injured it was genuine, we might rely on the inoculation; and experiments have shewn, that irregularities such as the foregoing have occurred, and that nevertheless the susceptibility of small pox has been destroyed; yet when we observe these palpable differences, a due regard to the security of our patient forbids us to trust to such cases.

The vesicle may be broken, and the crust forcibly removed on the ninth or tenth day, succeeded by an ichorous discharge, or scaly crust, preventing the healing of the sore. Or the appearances may be regular until the eleventh or twelfth day, when, perhaps, in consequence of the part being injured, the pustule instead of shewing any disposition to be converted into a scab, continues much inflamed, with an increase of the surrounding efflorescence, and terminates in ulceration, requiring much care and attention.—Dr. Jenner relates the case of a boy whose arm was incrusted on the sixth day, with a ragged amber coloured scab, spreading and thickening for some days, when at its edges appeared a vesicated ring, after

after which the disease observed a regular course, accompanied with slight indisposition. Five persons were inoculated from this source, on one of whom no effect was produced; on another a well characterized vesicle, and the remaining three exhibited appearances similar to those on the boy. Dr. Jenner inclines to ascribe these anomalies to the circumstances of the patients having been people engaged in laborious exercises, and the parts suffering friction from the cloaths. He thinks they may have been secured against the contagion of small pox, but had not an opportunity of putting them to the proof. I am of opinion, however, with Dr. Woodville, that such cases should not be depended upon.

A more embarrassing irregularity has sometimes arisen, and which might easily deceive the inexperienced or unwary. A vaccine inoculation shall be followed at the usual period, with an inflamed spot, gradually increasing until the fifth day, when a minute globular vesicle makes its appearance, perfectly transparent, and containing a fluid equally so: the inflammation continues to increase, and the areola

areola is formed about the ninth day; a scab nearly similar to the genuine succeeds, which usually remains two or three weeks. It even so well personates a regular disease as to be often accompanied by constitutional symptoms. But the circumstances of the vesicle never assuming the determinate figure, the smallness of the areola, and the indistinct feel of surrounding hardness, betray its real character.

If a vaccine vesicle proceeds regularly until the eighth day, and then dies away, it is not to be relied upon.

When no cicatrix remains, the inoculation must be supposed to have failed.

If, instead of the accustomed scab, a brittle one of a light brown colour be formed, circumspection is requisite: it may indeed have proceeded from mechanical violence, the foregoing stages of the disease having been regular:—but it induces a suspicion of some essential antecedent deviation.

Of all the before mentioned irregularities that is by far the most frequent, which is marked by the pustule arriving prematurely at

at its acme (accompanied with an early areola) and finishing its course much within the usual time.

Some place their chief dependance on the formation of the vesicle—others upon that of the areola;—but it may be assumed as a maxim, that, whensoever any remarkable deviation, from that course which genuine cow pock ought to pursue, has happened, we should regard it with distrust, and resort to a second inoculation, if we have opportunity; while, without reserve, we warn our patients of their danger.

5. Distinctive marks of spurious Cow Pock, with suggestions of some of its probable causes.

There are two kinds principally of spurious pustules: the first bears a strong resemblance to the true in several respects; its edges are commonly elevated; its contents limpid, and it continues the usual time, but it commences with a creeping scab of a pale brown or amber colour, making a long slow progress, sometimes unattended by any efflorescence, the pustule is more transparent and the pellicle is generally thinner.—This Dr. Jenner has

particu-

particularly noticed, and he ascribes it to the virus used for inoculation, having been previously exposed to a degree of heat capable of decomposing it.

The second kind is elevated in the centre and globular, with more or less of the appearance of a common phlegmon, and when punctured there issues opake matter, resembling what is produced in any other festering sore. It is more easily ruptured;—at the sixth or seventh day it generally runs into a perfectly purulent state. The areola is irregular or notched, resembling a large blotch; has a fiery or livid aspect; is not shaded off into the surrounding skin, and as Dr. Cappe observes, seems rather to lie under, than upon its surface, while at the same time it is less extensive, nor is the hardness around it so evident. A ragged scab prematurely covers the vesicle, or when the black crust should form, a yellowish sore appears drying and breaking out again, with an oozing from under it.

In some spurious instances, the whole arm inflames, a few hours after inoculation, and an extensive tumor is formed before the fourth day.—In others a fluid is found to be

be collected, earlier than we should expect, which is generally opake:—a small irregular efflorescence occurs, or a considerable inflammation and a premature scab.—Such cases may originate from using improper or stale matter, from external injury, from performing the operation with a rusty lancet, making too deep punctures, or they may have their foundation, in the inaptitude of the patients system to give energy to the agency of the virus, whether from general debility, or the presence of some other disease; at least I think I have observed, that weak, ricketty and scrofulous children are more liable to these imperfect and spurious affections than others.

Matter taken from an irregular or spurious pustule will frequently excite a similar disease, as was exemplified by the case of the Vienna nobleman, from whom infection propagated a spurious cow pock at Geneva.—Accidents of this kind happened in France and America, in the early days of vaccination, and I fear have occurred in this city and kingdom.

It is worthy of note, that a regular disease may be generated from an imperfect case;—

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in other words, a person may have cow pock as a *local* disease merely, and yet virus from his arm shall excite in others an efficient disease; we have an interesting case of this kind in the Medical Journal for February, 1801, like many other abortive cases it was distinguished by its rapid course, which affords the most certain proof that the disease will be cut off in limine; we shall hereafter find that the same occurrence is not very unfrequent in small pox inoculation. I may here mention as a probable cause of an abortive disease, evacuating the contents of the pustule at too early a period.

Mr. Simmons of Manchester, (Medical Journal, vol. v. p. 135) observes "that in those cases where either one or other of the above symptoms (violent inflammation or ulceration) particularly the former, has taken place in a severe degree, the future security of the patient against small pox, must be rendered somewhat doubtful." Here he supposes the excessive inflammation cuts off the infection *in limine*, and so prevents the constitution from being affected; he therefore recommends, "when the inflammatory appearances on the arm

arm greatly exceed the usual limits, that the vaccine inoculation should be repeated at a convenient distance of time, to guard against all chance of disappointment."—This observation may perhaps merit some attention, though it is unsupported by any facts hitherto noticed: something analogous to it however takes place in certain cases of chancre.

6. *Constitutional symptoms.*

As it has been asserted by Dr. Jenner, that those persons alone, are unsusceptible of small pox, who have undergone the constitutional as well as the local affection of cow pock, and as this position is undoubtedly true, some of my readers, may perhaps, be of opinion, that an enumeration of the constitutional symptoms, would with more propriety, have formed part of the description of a regular course of the disease, than to have been reserved for a seperate section. But when it is considered, on the other hand, that the indications of the system being affected, are in the greater number of instances, very slight, if not imperceptible, and that in children, who must compose the majority of our patients, the numerous irritations to

 which

which they are subject from other causes, must render our decisions, with regard to them very liable to error; I apprehend it will be acknowledged, that a thorough acquaintance, with the appearance of the local affection, and a strict attention to its progress, must be the primary objects of every man, engaged in vaccine inoculation, as being the best, if not the only criterion, we possess, to ascertain that the antivariolous process, has taken place. I have therefore deemed it more expedient, to describe minutely the progress of local vaccine, unembarrassed with any details, which might distract the attention, being anxious to impress upon the memory as forcibly as possible, the various appearances which it assumes.

While children are undergoing the cow pock, they are often attacked, with bowel complaints, teething, &c. the symptoms of which begin at different times, during the progress of the inoculation, but in general, we are informed, from the 5th to the 8th day, whereas the constitutional symptoms of cow pock, most commonly occur from the 8th to the 11th day. If the progress of the local

local disease be slow, that of the constitutional will be so in proportion. It has not been observed, that the state of the arm is productive of any variation in this respect, whether, the inflammation, be slight or more considerable, and that there be one or more vesicles, neither does the quantity of virus inserted, occasion any difference in the affection of the system. Dr. Woodville remarks that when the areola does not commence until the eleventh day, there will generally be more indisposition than otherwise.

At the periodalready mentioned, children are apt to be restless, and a little feverish, chilliness and thirst affect some, and slight twitchings others: sometimes they have nausea and vomiting, sometimes pain and swelling in the axilla, this last symptom is more common in adults, and drowsiness is more frequently remarked in children. Adults usually have the pulse accelerated, but the tongue is seldom foul, nor do they complain of thirst. An irritating rash, accompanied with intollerable itching and much resembling urticaria, has been noticed occasionally at the Vaccine Pock Institution, where it is denomi-

nated *Essera Vaccina*. It has been remarked by some, that the constitutional affection is often most evident on the night of the eighth day. Mr. Ring mentions a case of casual vaccine, in which pain and swelling of the axilla, with other symptoms denoting constitutional disease, before any inflammation or even pain took place in the hands. I inoculated a patient at Sixteen, who complained of considerable pain in the part for several days after the operation, the disease however was very well marked.

Besides the above mentioned symptoms denoting general affection of the system, convulsions have occurred in a few instances. Mr. Hutchinson of Manchester, relates two, which preceded the acme of the disease, the children were healthy, and of a strong muscular fibre: both recovered. A case of convulsions supervening on the Eighth day, occurred at the Institution House in Cope-street: the child was of a similar habit of body, four months old; I saw him a few hours previous to the attack, when he appeared very well, though as I was informed, he had passed a restless night; the arm had the usual appearance. The convulsions

convulsions recurred with increased frequency and violence for seven days, the child however recovered: in this case the progress of the areola was unusually slow, and for two or three days seemed quite stationary.—A similar case occurred to Dr. Clarke. In the Medical Journal, vol. 9. p. 361, we find reports of two cases of convulsions during vaccination, in one, the patient was three months old, the disease proceeded regularly until the eighth day, when there came on vomiting and diarrhœa succeeded by convulsions, and the child died on the following day. In the other appearances were favourable until the ninth day, she was then seized with the same train of symptoms which continued six weeks and terminated fatally.—Mention of cases accompanied with epileptic fits is also made in the Report of the Vaccine Pock Institution. In one, fever attended with diarrhæa appeared on the eighth day, continued till the twelfth and fits occurred on the tenth, there was only one vesicle and that without areola. In a few others, the fits attacked on the fourth, fifth, and sixth days, all recovered.

It is very doubtful, whether in any of these cases,

cases, the fits owed their accession to cow pock, or to some other accidental cause, as teething, affections of the bowels, &c. Mr. Hutchinson admits that in those related by him other adequate causes were present,—In that which occurred at the Institution House, the convulsions were evidently produced by costiveness which resisted the action of the strongest purgatives for several days, at length however a copious discharge of hardened fæces procured perfect relief to all the symptoms. Dr. Clarke also is clearly of opinion, that in the case which occurred to him, the convulsions proceeded from a most obstinate state of constipated bowels. It appears pretty evident, from a more particular account of the fatal cases, given in a subsequent number of the Medical Journal, that the event was to be attributed to a diseased state of the bowels—Mr. Duke of Suffolk Street London, had a patient attacked by convulsions, but the child was at the age of teething. The accustomed irritation at which period seems also to account for those instances mentioned in the Report of the Vaccine Pock Institution. Were convulsive fits, liable to be excited by

cow

cow pock it is more than probable that we should meet with them oftener. I am therefore inclined to consider their appearance during its progress as merely accidental.

The progress of cow pock is sometimes interrupted by other complaints. Dr. Jenner records a case, in which scarlatina anginosa appeared on the eighth day, after cow pock inoculation. The inflamed and hard areola was suspended until the scarlatina had retired from the constitution. In another instance taken notice of by the same author, the activity of cow pock overcame the influence of scarlatina, after the eruption had been present for twelve hours, and pursued its regular course for four days, when the symptoms of scarlatina returned and continued the usual time. In the Medical Journal vol. 9. P. 370, we have an account of the suspension of vaccine by varicella, and when the latter declined the former resumed its course.

It will be often difficult to ascertain the presence of the constitutional symptoms of vaccine, especially when any irregularity local or general has occurred ; we must also hold in remembrance, that imperfect or spurious cases often

often exhibit strong indications of the system being affected, such difficulties we must expect will occasionally present themselves as may embarrass the most intelligent practitioners. I can only repeat, that where the smallest doubt is entertained of the efficacy of the operation, it ought to be repeated, if an opportunity is not afforded us of performing it, we should disclaim all responsibility for the case.

A reinoculation with cow pock matter may suffice as a test, because, if the first inoculation has been effectual, the second will differ in its progress,—appearing and terminating earlier, the scab also is different and there seldom remains a cicatrix, but should active vaccine virus fail on a second trial, recourse must then be had to variolous; when however the constitution shews an insusceptibility of the one it commonly does so of the other.

Mr. Bryce has proposed a test of constitutional affection, namely by double inoculation: thus, having inserted the virus into one arm, we repeat the operation on the other, five or six days subsequently, and if the first has

has exerted its specific action on the system, the second inoculation will thereby be so far accelerated, that both vesicles will arrive at maturity and die away nearly about the same time. The proper time for a second operation, must depend on the progress made by the first inoculation ; he supposes in general that between thirty-six and forty-eight hours before the areola of the first inoculation begins to appear, is the most proper period, which in a perfect case nearly answers to the sixth day. The second in general produces a smaller vesicle than the first. Mr. Hugo, of Crediton, has long practised vaccination in this manner. Whether or not the validity of this test be fully established I cannot take upon me to affirm; few I believe have adopted it, and the experience of several does not seem to correspond with Mr. Brice's. Inoculations performed at the Vaccine Pock Institution on the eighth day and later, produced nothing more than a pustule like a common phlegmon quite unlike cow pock, and often no inflammation at all was perceived. And Mr. Kelson, Seven Oaks, England, observes that if a person be inoculated

lated with vaccine lymph, and the operation be repeated a few days afterwards,—if the first has taken effect, the second disappears. Experiments however made at the Cow-Pock Institution in Cope-Street, have corroborated Mr. Bryce's sentiments upon this subject.—The secondary pustules in these trials were smaller than the first, more globular, covered with a thinner pellicle and accompanied with less surrounding efflorescence. The scabs were not so transparent but of a paler colour, and in falling off left an indistinct cicatrix.

A *local* cow pock pustule may, as already remarked, be produced, which shall not secure the patient from the contagion of small pox, although virus taken from such a pustule may in future inoculations excite a perfect disease. The like has been observed in small pox, a local affection, generating an efficient disease in others, though the person from whom the infection was taken received no benefit by the inoculation, an example of which may be found in the Tran. Coll. Phys. London. Even virus taken from a local small pox, after cow pock will have the same effect.—And we know, that on nurses

and

and people who have close intercourse with patients labouring under variola, eruptions have appeared though they had previously gone through the disease, vid. Rosenstein, Kirkpatrick, &c.—From these also active matter might be obtained.

It may be remarked in this place, that there are imperfect and spurious cases of small pox, which may be either antecedent or subsequent to the genuine—Rosenstein describes the *Warty* or *Stony* and the *Watery* or *Crystalline*. Both kinds break out within twenty-four hours, and disappear in five or at the most six days, sometimes leaving scars. These and other sorts are noticed by Van Swieten, Sydenham &c. They bear one general character, of appearing at no stated period, not suppurating regularly, and being seldom accompanied with any or much fever, hence may have escaped observation entirely, or been seldom an object of the Physician's attention. In some instances when they were more severe, professional men seem thereby to have been led into error, conceiving that their patients had had the small pox twice, or more unfortunately, taking infection from such

cases

cases, have communicated to others, what they imagined to be a genuine disease.

It is not to be expected that the previous infection of vaccine should entirely supercede that of variola. Appearances will generally ensue at the point of insertion; an inflammation arises increasing to the sixth or seventh day and sometimes till the tenth. In one case Dr. Clarke saw it increase till the fourteenth, but it then disappeared.—The pustule rarely forms an abscess, resembling more a hard tumor in the flesh. Sometimes a transient sickness is experienced, with pain and stiffness in the arm, or an eruption of anomalous pustules, which do not arrive at maturity. And when used as a test it is rather desirable, than otherwise, that such symptoms should occur, as may prove that the patient is susceptible of the local affection only.

It is a singular circumstance that when a person is inoculated with the cow pock or small pox, who has previously had either of these complaints, or whose constitution is not disposed to receive the infection, the local inflammation will appear sooner than otherwise.

Independent

Independent of the antivariolous power justly attributed to cow pock; it is asserted to have other material effects upon the constitution. These may be divided into *prejudicial* and *salutary*.

It has been accused of exciting latent complaints, and of inducing others with which the system would not otherwise have been affected.—Troublesome eruptions on the skin, and obstinate glandular swellings have been laid to its charge; and where the seeds of scrofula lie dormant in the constitution, it is said to have roused them into action.—Such accusations are proved by ample experience to be totally void of foundation.—If a child who has gone through the cow pock, be seized several months after with any complaint, no matter what, it will be supposed to proceed from thence.—Being requested to inoculate a child with cow pock, the operation was for some cause postponed, meanwhile the child became affected with tumours in different parts of the body, which suppurated and ran into ulcerations, and becoming quite emaciated died in a few months.—I remember

ber another instance of a child who was to have been vaccinated by a friend of mine, which was seized with convulsions, on the day previous to the intended operation, and expired in a few hours. Now had these children been inoculated, can there be a doubt, but that their deaths would have been attributed by many to the cow pock? and their cases have been discanted upon very learnedly and at great length, by those who feel it a pleasure and their interest, to avail themselves of every opportunity to depreciate this most beneficial practice? These occurrences should warn us against ascribing effects, to different causes than those which really produced them.

Jenner, Ring, Moreau, and many others whose experience entitles them to give an opinion upon this subject, confidently assert, that so far from injuring the general health or inducing the complaints alluded to; the effects of cow pock in improving the constitution and removing several diseases, particularly those of the skin, have in many instances appeared to them remarkable. Mr. Simpson in a letter to Mr. Ring, relates the case of a

child

child who was cured by vaccination of a most violent and obstinate eruption of the crusta lactea kind, which covered the whole head and face, and the greater part of the body, and had resisted the most active medicines.—Several instances occurred to the same gentleman, in which the general health of weakly children was much improved by it.

Dr. De Carro's experience tends to confirm the advantages of vaccination in cutaneous affections. He records the case of a child seven years old who was relieved by it, from an herpetic eruption over the whole body, of three years standing, for the removal of which other means had been tried in vain.

Dr. Colon, a zealous friend to vaccination, (who at a considerable expence fitted up his own house in the neighbourhood of Paris for the reception and accommodation of those who were to be inoculated,) enumerated several examples of the utility of the cow pock in these disorders, and in the scrofula.

Dr. Cappe of York, assents to the opinion, that it has a strong tendency to correct a scrofulous disposition in the system. It appeared

peared to him, considerably to relieve three cases of eruptions on the skin, and entirely to remove another complicated with ophthalmia. Mr. Hutchinson, of Manchester, has found vaccination a remedy in several cutaneous affections.

Dr. Odier bears testimony to the restorative virtues of cow pock in weak and delicate constitutions.—Dr. Patterson of Montrose, Mr. Dunning of Plymouth Dock, and the Rev. Mr. Finch of St. Helens, are induced to concur with him in opinion from the result of cases, which fell under their observation.

In two cases which occurred to Dr. Moreau, one a scrofulous ophthalmia, the other a fistula near the elbow; the former was cured, and the discharge from the latter much lessened by it.

The Committee of Vaccine Inoculation, at the Louvre, found that matter taken from vaccine patients labouring under other cutaneous diseases, such as the itch and small pox, did not communicate any disease but the cow-pock, and they believe that the vulgar opinion relative to the inoculation

of

of other diseases with the cow pock, is without foundation. I believe the itch or other chronic eruptions of the skin, are not communicable with cow pock; but I should not think it prudent to take vaccine virus for inoculation, from the arm of a patient labouring under small pox.

M. Fournier of Brussels, gives us the case of a child four years of age, who for a long time was affected with deafness, which grew worse and worse: the tenth day after inoculation with cow pock, when the arm inflamed, the deafness began to diminish, and was entirely removed in a few days.

Mr. Ring records two cases, of the salutary effects of the new inoculation, communicated to him by Mr. Garsed, Surgeon of Blagan, in Glamorganshire, South Wales: one, an obstinate cough of some months standing, which did not yield to medicine, five days however after vaccination, the cough disappeared suddenly, and did not return, the child remaining in perfect health.—The other case was that of a boy sixteen months old, who was so full of scrofulous tumours, that it was the opinion of every medical man who

saw him that he could not live more than twelve months. His mother also laboured under this disease and had lost one child by it, who died in a most deplorable state. At the time of inoculating this boy with cow pock he had several abscesses, particularly about the arms, neck and shoulders; he went through the disease in the most favourable manner, the sores all healed in a short time, and the child was restored to perfect health, which was entirely attributed to the cow pock.

Mr. Custance of Kidderminster, had three cases of *Atrophia Lactantium*, perfectly relieved by vaccination. And Dr. Patterson, already quoted, observes that "many children puny from teething, one with diarrhæa, and another with slight eruption and cough, from the same cause, but all without fever; as well as one child labouring under *pertussis sine pyrexia*, have been observed to get very fast rid of the complaints under which they laboured, and improve much in their general health after vaccination." Mr. Bryce found *tinea capitis*, sore ears, ophthalmia, &c. to be much relieved by it.

Dr. Husson of Paris, among several cases in which vaccination proved a remedy for other

other diseases, particularly mentions two. One of intolerable head ache of several years continuance: the other of scrofula, cough and shortness of breath; both were completely removed.

Mr. Watt of Paisley records a case of a gentleman who by accidentally applying some vaccine virus to his nostrils, produced there two pustules, by which he was completely cured of a very obstinate soreness in his nose of several years standing. "May not the insertion" says he, "of the vaccine matter in some inveterate ulcers produce a permanent cure?" *

Count de la Roque, takes notice of a severe epidemic hooping cough which prevailed at Lyons, during which it was observed by medical men, that those who had been inoculated with cow pock, either escaped the disease entirely, or had it in a mild degree. I have known Pertussis to get much better after small pox inoculation.

Many more instances might be adduced in support of the opinion entertained by those authors, of the efficacy of cow pock in removing

* An ingenious medical practitioner of Calcutta, suggested lately the application of vaccine virus to cancerous sores; the experiment has not, I believe, been yet put in practice.

ing several diseases. Any experience I have hitherto had, does not warrant me in hazarding an opinion upon this important part of of our subject. I have indeed seen two or three cases in which children seemed to have been relieved from obstinate eruptions by it: though generally speaking, I am rather averse, to inoculation, when other diseases are present, for reasons which I shall hereafter state. For my part, I shall not require any further benefits from the new inoculation than those already established, but will rest content with the assurance, that without injuring the constitution in the smallest degree, it renders it for ever exempt from the contagion of small pox. To be more convinced of the fact, that cow pock is not prejudicial to the general health; I lately visited a great number of children who were inoculated by me, one, two, or three years ago, and I did not in a single instance detect any unpleasant symptom imputable to it.

7. Inoculation—the mode of conducting it, and circumstances to be attended to in the state of the patient. The medical treatment of the complaint. The best mode of preserving the virus, &c. &c.

It unfortunately happens, that the apparent facility in the management of the new inoculation

culation has on several occasions, led practitioners to commence the practice without any previous knowledge of the subject, and to conduct it with the most unwarrantable carelessness and inattention. The dangerous consequences of such conduct, are too apparent to require any comment.

I have heard many assert, that spurious pustules cannot be mistaken for genuine; but we have good reason to know that such mistakes have been too often committed. The Parisian practitioners, who seem to have attended a good deal to this subject, acknowledge, that at the commencement of their practice, they often confounded the spurious with the true vaccine pustule:—and Dr. De Carro of Vienna, who is justly stiled the Jenner of the Continent, was not ashamed to make the same confession.

In conducting the inoculation of cow pock, several circumstances are to be attended to. These I shall consider under distinct heads. And,

1. *State of the person to be inoculated.* Although cow pock inoculation is perfectly free from danger, and may be practised with the greatest

greatest safety at all ages; still however, I should be inclined to recommend some attention to the age and general health of the person to be inoculated. Children have been vaccinated a few hours after birth, and have gone through the disease in its usual mild form. I myself inoculated a child the day after it was born, and several within the nine days; of the propriety of which, however, I am now strongly disposed to doubt, unless the existence of small pox contagion in the neighbourhood, or some such cogent reason, renders the operation immediately necessary. We know very well, that infants for some days after birth, are subject to dangerous complaints in the bowels, to what are called *nine day fits*, which invariably prove fatal, and to many other disorders which are by no means free from danger. Therefore we should not if possible inoculate a child till it be at least a month old, lest we bring unmerited censure on the cow pock. It may also be remarked, that as new-born infants are very irritable, and much disposed to febrile complaints, the local inflammation may produce unpleasant consequences; nor can we

determine

determine what, in certain cases, may be the effect of introducing cow pock virus into such tender irritable habits.

2. *Dentition.* The period of teething has been mentioned, as an improper time for inoculation; children being said at that time to be in a very irritable state, and subject to fever from slight causes. If the subject be in any degree indisposed, I certainly would not perform the operation, otherwise I can see no objection to it. During the continuance of any feverish complaints, I would rather decline inserting the virus, lest the antivariolous process should be interrupted or entirely impeded.

3. *Eruptions on the Skin.* Children are subject to many chronic eruptions on the skin. If in such cases, they are inoculated, being very restless, and the skin itchy, the vesicle is more liable to be torn off, and the part to run on to troublesome ulceration, before the constitutional affection has taken place; they are apt also to apply the virus which they have rubbed on their fingers, to other parts; therefore in such subjects, great attention will be required to preserve the vesicle

sicle entire. If the eruptions be in the neighbourhood of the eyes, the objection will be still greater; for we are informed by Dr. De Carro of a case under his care, where the scratching of such eruptions with the fingers, embued with vaccine virus, produced so much inflammation, as to occasion very serious alarm for the loss of sight. Under such circumstances, I am inclined to postpone the operation, unless the small pox be in the neighbourhood.

We often find great difficulty in communicating cow pock to patients affected with the itch. That certain eruptions have some influence on the vaccine disease, I am much inclined to believe, having seen doubtful cases much more frequent, where these eruptions were present than otherwise.—"I frequently find," says Dr. Jenner, "when a child has a scabby face, especially if it be accompanied with tinea capitis, or papillous eruptions, that the purest vaccine virus will produce a pustule, that will never contain limpid matter, but throughout all its stages, its contents will be purulent. If I inoculate from this source, almost to a certainty, I produce a similar

a similar pustule ; the scab which succeeds, is not hard and dark coloured like the common vaccine scab, but soft and of an amber colour, like that of the small pox, and the whole progress of the disease is accelerated." In another place he observes, " I do not mean to say, that the pustule is always imperfect, and not effective, when the inoculated patient has this malady; on the contrary, it is sometimes perfectly correct, and much more frequently so, when it has been of long standing, than when in its recent state ; and what is remarkable, the disease is then (when of long duration) sometimes swept entirely away." He advises practitioners to be particularly circumspect when they inoculate patients labouring under cutaneous diseases.

Scrofula. The presence of this complaint is no objection to vaccination ; but here also great care is necessary to preserve the vesicle, for in such people it is very apt to be torn off, and a troublesome ulceration to ensue.

Pregnancy. " In pregnancy," says Dr. Pearson, in his Treatise on the Cow Pock, " the inoculated small pox is so commonly

mortal

mortal to the unborn, in every period of gestation, that no prudent practitioner would chuse to inoculate under these circumstances; but to escape taking the disease by effluvia, in the casual way." And in his Essay on the effects of variolous infection in pregnant women, in the Medical Commentaries for 1795, he says, "in about twenty cases to which I can refer of the natural small pox, under similar circumstances of pregnancy, the disease proved fatal to three fourths, or four fifths of the women, and to a still greater proportion of fœtuses." It is I believe generally supposed that a pregnant woman, who has already had the small pox, may expose herself with impunity to the contagion of that disease; as to herself the assertion is well founded, but not so with respect to the infant she carries; for we are informed by Dr. Mead of a pregnant woman, who sometime after nurse-tending a child, ill of the same disorder, was delivered of a dead child, covered with variolous pustules.

Several instances are on record of women being inoculated with cow pock during pregnancy, all of whom had the disease in its

usual

usual benign form. Mr. Ring indeed mentions the case of a woman, ten weeks pregnant, who aborted after being vaccinated; but as the accident did not happen till twenty four days after the insertion of the virus, and as this patient had miscarried four times before, it seems more than probable that the misfortune could not be ascribed to cow pock.

Seasons. The new inoculation has been practised with equal safety, in all climates, and at all seasons of the year; however we are informed by Mr. Evans, that those who were inoculated during the prevalence of a cold north-east wind, were more apt to have their arms much inflamed. The same holds good with respect to small pox. Mr. Ring and others suppose, that either heat or cold when excessive, is capable of aggravating the local, and consequently in some measure the constitutional symptoms.—Dr. Waterhouse of America, considers cold combined with dampness worst of all. It has been observed at the Vaccine Pock Institution, in London, that in extreme cold weather the vesicle is smaller, slower in its progress, and accom-

accompanied with less inflammation than in warmer seasons, and that a rash is more common in summer than in winter. Dr. Adams found that the disease was suspended during the blowing of the *Leste* wind in Madeira. It is well known that the *Harmattans* in Africa, and *Sirochs* in Italy arrest the progress of of infection. I have inoculated children during the extremes of heat and cold, in this climate without being able to detect any variation from the usual mildness of the disease, except that it often observed a more rapid course in summer than in winter.

Adults. In adults and those advanced in years, the cow pock is found to be perfectly mild and safe, the local and constitutional symptoms are however more troublesome than in young children, they are more apt to complain of pain in the arm and axilla, of head ache and general feverishness.—In some adults inoculated by me, there was considerable pain in the part, and in the shoulder reaching to the elbow. I have inoculated some on whom I was not able to excite a regular and well marked pustule, instead of which there was produced a phlegmonic inflammation

tion attended with much pain and swelling in the axilla, and in two or three cases considerable head ache; yet these persons were convinced that they never had had the small pox. In an infant repeated insertions of the virus were followed each time by phlegmonic inflammation, producing more inconvenience than the true vaccine disease: such cases have been mistaken for genuine cow pock.

People advanced in years are often unwilling to submit to inoculation for cow pock, thinking that as they have escaped the small pox so long, notwithstanding repeated exposure to it, they will keep clear of it during the remainder of their lives, and that therefore such precaution is unnecessary: ever day's experience exposes the absurdity of such reasoning. We have often heard of people who have escaped the contagion of small pox until an advanced period of life, when they have caught it and perished. Mr. Ring, records the case of a man, who was inoculated with small pox eleven times, and once taken to a patient labouring under it, and inoculated in both arms with a large quantity of recent matter, but to no purpose; yet this man afterwards caught the disease in a natural way.

In

In Rosenstein, we find several cases of small pox in persons of from 50 to 80 years of age.

Repeated inoculation for small pox having frequently failed to communicate that disease, the person being thus left in great suspense, we may here try the cow pock with a great probability of success. A lady in Cork had been fourteen times inoculated for small pox, but ineffectually, she consequently remained apprehensive that one time or other she would fall a victim to it. The insertion however of the vaccine virus being followed by a regular cow pock vesicle, removed all her fears.

Previous exposure to small pox contagion. It has been supposed by Fordyce and others, that small pox manifests its operation upon the constitution in about fourteen days after exposure to its contagion; could we ascertain this point decisively, we should be enabled in general, to supersede that disease within six days, by cow pock, which exerts its influence about the 7th or 8th day from the time of inoculation; but as we are frequently disappointed in this expectation, we should, although the vaccine may appear to have taken effect, be extremely cautious in giving an

an opinion until we are certain, that the patient has undergone its action completely. As however some persons are more liable than others, to be seized with contagious diseases, and that even the same person shews greater susceptibility of infection at one time than another; it becomes our duty to advise cow pock inoculation at any period of exposure, previous to the eruption of small pox, warning our patients at the same time of the uncertainty of the experiment. Should we fail in our endeavours thus to supersede small pox, we shall have the satisfaction thereby to render it milder. Mr. Ring remarks that whatever has a tendency to prevent, must be supposed capable of mitigating the disease, and that the cow pock possesses this property, his experience warrants him in asserting, two thirds of his patients who had been vaccinated while exposed to small pox contagion, escaping entirely, and the remainder having the disease in the mildest form: the observations and experiments of Drs. Odier, Sacco, De Carro, and the Committee of Vaccine Inoculation at the Louvre, confirm this opinion.

I was

I was fortunate enough in the course of last summer to supersede variola by vaccine inoculation. Being requested to visit a child at a house in Temple-bar, on whom the small pox, of a most confluent kind, appeared three days before, I observed a child in the same room who had not had the small pox; I prevailed upon the parents to have it inoculated with cow pock; the experiment succeeded, although the child unavoidably remained exposed to the full force of the small pox night and day during the whole course of the disease. About the same time four children were inoculated by Mr. Watts of this city, with small pox: on the day following, I vaccinated four other children from the same house, a constant intercourse was maintained between them: the former had the disease well marked, on two, there was a copious eruption: My patients remained entirely free from any symptom of small pox, and went through the vaccine in the most regular manner.

When patients have been vaccinated, it has been imagined by some, that they may with impunity be exposed to small pox contagion, and a belief has been entertained that the latter

latter disease is not infectious during the eruptive fever: both of these opinions are founded in error, and with respect to the period of small pox eruption, a case detailed in the Medical Journal, Vol. 5, P. 536, proves the possibility of the disease being communicated at that time; and in Vol. 6, P. 4, of the same work, we read of two children, on whom the small pox appeared at so early a period after birth, that we must believe them to have imbibed the contagion in utero, during the eruptive fever of their mothers respectively, who each laboured under that disease.

The Vaccine Pock Institution remark, that if the eruption of small pox occurs between the 9th and 14th day after vaccine inoculation, the cow pock will to all appearance go regularly through its different stages as well as the small pox;* but that if the eruption

* While these sheets were at press, a case occurred which seemed to corroborate this opinion.---Two children, who were previously exposed to small pox contagion, were vaccinated from the same source at the Institution House, Cope-Street, on the 12th of April last. Upon one, the progress of the arm was perfectly characteristic till the 11th day, when there appeared an eruption of confluent small pox. Several pustules were observed through the vaccine areola

of the latter appears before the period just mentioned, the cow pock vesicle will become stationary for a while, and then recede or assume the scabbing process; this however is not always the case, for there is an instance recorded by Dr. Barry of Cork, where the variolous fever supervened on the third day after vaccine inoculation, followed the next day by a copious eruption of small pox, which did not at all seem to influence the progress of the vaccine disease. When under any of the aforementioned circumstances, one or other disease appears, we should endeavour to distinguish accurately which it is, lest we impute to cow pock, naturally mild, the severe symptoms which may belong to small pox.

Eruptive

areola, but which did not run into the vesicle, as in variolous cases. The inoculated part now assumed somewhat of the aspect of the small pox incision, yet the vesicle preserved a tolerably well defined margin. The ensuing scabbing process was not regular. Virus taken from this patient on the 8th day, produced in others the true vaccine, unaccompanied with any eruption. The child seemed likely to recover. The other infant afforded a most satisfactory instance of cow pock, and although he slept all the time with the small pox patient, did not receive the contagion. In this case, the vaccine seemed to have been sooner evolved than in the other, (the areola appearing on the 8th day) which may account for the child escaping the small pox.

Eruptive and other febrile diseases, frequently appear during vaccination, with the effect only of sometimes retarding the course of the vesicle.

Many dangerous diseases must occasionally occur during the presence of cow pock, yet it is rather singular that we should seldom or never hear of a person dying of any disease while under the influence of that affection. Is there not therefore reason to suppose, that, while its action upon the system is going on, cow pock does in some degree protect the patient against the fatal effects of other diseases?

Practitioners much engaged in variolous inoculation, have observed that in some cases they found it impossible to communicate the disease, and hence conclude that some constitutions are altogether insensible to the action of small pox. The same thing has been remarked in vaccine inoculation. Whether there be any whose constitutions are from birth insensible to variolous contagion, without having undergone the cow pock, is a question impossible to answer; it is however

very probable, that those who resist both diseases, have had during infancy the small pox, but of so mild a kind that it escaped observation.—Besides we are informed of fœtuses having gone through the small pox in utero.

Selection and preservation of Matter. It is of the greatest consequence to be particularly careful, in the selection of virus to be used for inoculation. Our attention is chiefly to be directed to three circumstances.—1st. The appearance of the vesicle from which matter is to be taken.—2nd. The proper time for taking it—and 3rd. The best mode of preserving it.—I have already described, at some length the appearance of a well marked vaccine vesicle: infection should not be taken from any pustule which deviates materially from that description. As to the best time for taking infection, that must depend in some measure upon circumstances. When one puncture has been made, and of course there is but one vesicle, we should not take infection from it previous to the 7th or 8th day, lest by injuring its structure, we interfere with the regular course of the disease, and prevent the completion of the antivariolous process; but when there

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are two or more vesicles, it may be taken at an earlier period, and I believe, will be found proportionably active, and vicê versâ. As cases, though rare, do sometimes occur, whose progress is somewhat accelerated, and oftener retarded, this rule will admit of exceptions, accordingly virus has been obtained pure, even on the 20th day. We should always hold in view the state of the areola, for when it is far advanced, matter should not be taken from the pustule. Many practitioners suppose, that so long as the fluid continues limpid, it is fit for use; but they all agree, that it is to be preferred at an early period. Mr. Ring says he produced a perfect disease with matter which was quite opaque and purulent; and Dr. Woodville likewise, from a patient in whom the disease was so far advanced, that he was only able to collect a little moisture from the margin of the scab on the 13th day. We are not informed however, whether these patients were afterwards exposed to the test of variolous inoculation. An acquaintance with such facts may not be improper, but they should not induce us to take virus at such late

late periods, because we have many well authenticated cases on record, of ineffectual pustules being excited by such means. Dr. Jenner, and many others, experienced in vaccination, assert, that matter taken when the areola has made any considerable progress, is not to be depended upon as a protection against the small pox, "although it will produce a disease imitative of the true vaccine." It is now well known, that the famous Portsmouth cases, were produced from matter on the 11th day. That these pustules were not genuine will appear obvious, when we are informed that their contents, "*ran rapidly into a purulent state after the 8th day.*" The histories of variolous inoculation, furnish us with many instances of spurious small pox, occasioned by degenerated matter.—In the Memoirs of the Medical Society of London, Mr. Kite relates, that three children were inoculated by him, all of whom had inflamed arms, on two a few pustules only, but on the third a great number appeared. Sometime afterwards, these children all took the disease in the natural way. This accident he supposed to occur from his taking

ing the infection at too late a period; (15th day after the eruption) he therefore cautions us against using variolous matter, unless when fresh. Of five persons inoculated by Sir James Earle, with matter taken from a small pox pustule, far advanced, four took the disease afterwards in the natural way, one of whom died. In these cases, the inflammation and suppuration were as great, if not greater than usual: eruptions also appeared about the 9th day, which however soon died away. In the Medical Journal, we find several cases of spurious small pox, occasioned by degenerated matter, which were attended with eruption and constitutional indisposition. The necessity of paying due attention to the particular time of taking small pox infection, might be pointed out by many similar examples. The same caution is requisite in conducting cow pock inoculation, from neglect of which, either complete failure will often ensue, or a spurious disease be produced. A child being inoculated by Dr. Barry of Cork, with virus taken on the 11th day, "the arm became inflamed, the inflammation spread, and on the 7th day, strong marks

marks of constitutional disturbance appeared, as quick pulse, increased heat and vomiting. The inflammation terminated in a large irregular scab. A second inoculation was followed by nearly similar symptoms, but the constitution was less affected, and the scab, though by no means resembling the genuine cow pock, was smoother at the edges. The child has been since inoculated a third time, and at length shewed the true cow pock on the arm, but with very slight marks of indisposition. In the Medical Journal, Vol. 4, P. 488, we have an account of the pernicious effects of vaccine virus, taken at a late period from a pustule, after pus was formed: great ulceration of the arm was produced, attended by very considerable erysipelatous inflammation, without the susceptibility of variolous contagion being destroyed. In the same Vol. P. 567, cases are recorded by Dr. Lettsome, of morbid ulceration not at all possessing the character of the true disease, occasioned by matter taken at a very advanced period.

Infection should not be taken from any adventitious pustule which may appear on the

the body, but from the *original* vesicle; nor should we take infection from a pustule excited in a person who has had, or is even supposed to have had the small pox. In Dr. De Carro's book on cow pock, we have an instance of spurious matter being generated in this way, which deceived various inoculators on the Continent.

It has been asserted by some, that in cases where persons are inoculated with cow pock matter, and also with small pox matter on the same arm, the pustules produced by the cow pock virus, will afford *pure* vaccine matter: though this may happen, the Rev. Mr. Jenner, Ring, and others, found the case otherwise.

When infection is to be taken, a slight puncture or two should be made with a lancet, held horizontally, in the margin of the vesicle, the virus will soon flow, and may be collected for use; if it is not freely discharged, a very gentle pressure may be made, or another puncture; but every sort of roughness must be carefully avoided; severe inflammation and troublesome sores being thereby frequently occasioned. Having obtained

tained a sufficient quantity from the vesicle, we may apply cold water to it, in order to prevent the further effusion of the virus.

Different authors have recommended different modes of preserving the virus: some attention is required here, for if improperly preserved cow pock will fail altogether, or induce an imperfect disease. Many desire it to be taken on thread, which being applied to the punctured vesicle, so as to absorb as much as possible of the Lymph, may be suffered to dry, and again applied; this operation to be repeated till the thread is perfectly saturated, which may be preserved in a phial, or a quill made air proof. Cotton thread is better than the common as it absorbs more. In the summer of 1800, Mr. Ring sent some cow pock matter on cotton thread rolled up in paper, and covered with a varnish, which excluded the air, to Dr. Crawford of Baltimore, which succeeded. Others recommend us to take it upon the point of a quill, or several slender portions of one may be infected and enclosed in the barrel of another, or in a bottle. This mode has been found very effectual, and is therefore much used and

recommended

recommended. Small pieces of ivory shaped like the tooth of a comb, termed Vaccinators, seem well adapted to take and preserve the virus, they do not contract rust, therefore matter may be kept on them for a long time when enclosed in a bottle. I do not know any better or more convenient method of preserving virus, than between two squares of glass, which may be charged by applying them several times to a punctured vesicle, they are then to be enclosed in a moistened bladder, or gold-beater's leaf; or, as recommended by Dr. Cappe of York, to unite the glasses and brush their edges with a solution of sealing-wax in spirits of wine; the former however, as practised at the Cow Pock Institution in Cope-street, appears the best; the bladder when moistened will so adhere to the glass that the air will be perfectly excluded; matter packed up in this way was sent by Mr. Ring to Dr. Waterhouse of Cambridge, (America) who used it with success on the 70th day after it was taken from the pustule in London.* Dr. De Carro however, was never able to

* Mr. Shoolbred, Superintendent General of Vaccine Inoculation, in Bengal, has found this mode to succeed best.

to excite a pustule with infection received from London in this way; he therefore prefers thread, by which the virus originating with him was conveyed to India, and excited the disease after other modes of transmitting it had failed. We are informed by the same gentleman, that matter succeeded which he had received upon thread from England, in a letter dated March 20th. 1799, and used the 23d of September following. Dr. Pearson sent matter to Paris included in a bottle full of Hydrogen gas which proved active.

Tissot preserved small pox matter upon thread for twenty-six months, which succeeded, and Kirkpatrick preserved some in the same way for Five years and eleven months, which also was found to be active. Such practice however is unnecessary and improper. We should recollect that by long keeping the vaccine virus sometimes undergoes a change which renders it incapable of producing a true vaccine pustule. Stale matter produced spurious pustules which were mistaken for true cow pock, as Mr. Ring states, at Geneva, and Vienna. I saw a spurious pustule attended with much inflammation, excited by matter

which

which had been preserved on a lancet for some days.

Infection should always be allowed to dry in the shade, without heat, before it be packed up, and then kept in a dry cool place.* Dr. Jenner observes, that matter dried by the fire had a greater tendency to produce ulceration than to excite a true vaccine pustule; and Dr. Thornton says, it proves quite inert, whereas, when dried in the sun he found it active; however the shade, as observed, is preferable. Cow pock virus should not be kept on a lancet longer than ten or twelve hours. Platina being incapable of oxydation, and not liable to contract rust, lancets may be made of it, as used and recommended by Dr. Pearson.

Mr Bryce prefers the cow pock crust to all other modes of preserving matter; with a solution

* The activity of cow-pock matter seems to be impaired by very high degrees of temperature. Failures in warm climates seem frequently attributable to this cause, and in the West Indies particularly, the disease, has in consequence, been several times lost,---hence practitioners there, consider it as an established law,---"that in a temperature of 90°, the vaccine matter loses its activity and becomes absolutely inert."

solution of which he has been in the practice of inoculating. Three years ago I used some which was obtained from him and produced a regular disease: and lately I repeated the experiment, with a crust from one of Dr. Clarke's patients, with the same effect. I therefore believe Mr. Bryce's proposal to be a good one, particularly in situations where recent matter cannot be procured. I consider it as cow pock matter concentrated, and as it is not liable to decay, or decomposition, at least for a great length of time, it will justly claim the preference should the experience of others coincide with ours. Mr. Hugo of Crediton, has long used the vaccine scab, and Dr. Coxe of Philadelphia, succeeded in producing a perfect cow pock vesicle with a crust which had been preserved nine months and three weeks. In Sweden the crusts of the small pox have been frequently preserved forthe purpose of inoculation. Great care is requisite in collecting the vaccine crust, not to take any but that which is first formed, and answers the description already given.

Mode of Inoculation. Fluid matter being much less apt to disappoint us than dried, is

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to be preferred, therefore we should, if possible, transfer it immediately from one patient to another. Having made two or three slight scratches, so as merely to draw blood, we take the matter from the vesicle, and with the point of the lancet, apply it to the little wounds. If much blood flows, the infection may be washed off, therefore it should be wiped away so long as it continues to be discharged, after which the matter will be applied with a greater probability of success. The operation may be performed near the insertion of the deltoid muscle, and to ensure its effects, be repeated in another part of the *same* arm, at such a distance from the first, as that the two pustules may not run into each other. The slighter the wound, the more gentle in general will be the disease: deep incisions are commonly followed by much inflammation. Very young children should be inoculated in one place only. After the operation, the part may be left uncovered for some hours. In several grown up people whom I have inoculated, there was the greatest difficulty in preserving the vesicle entire; and in some of them, repeated inoculations were

were followed by a phlegmonous appearance, quite different from the true vaccine pustule; whether this circumstance was owing to the state of the skin in adults, to their mode of living, or to their having previously had the small pox, I cannot venture to assert. I have more than once observed the same thing in children. I lately inoculated some on whom premature pustules were produced, the areolæ of which were fully formed on the sixth day; the scabs however remained for the usual time. I am therefore much disposed to believe, that the patients above alluded to, had had the small pox.

When the infection is dry upon the point of a lancet, I have always found, that gently breathing upon it will sufficiently soften it, I then insert the lancet laterally about the eighth of an inch under the cuticle, having retained it there for a few seconds, moving it a little backwards and forwards, with a view to lodge the infection in the wound, I withdraw it with a degree of pressure, and if any infection remained upon it, I wipe it in the part. If the virus is contained upon the point of a quill, or a vaccinator, or a needle,

needle, a wound such as I have mentioned, must be inflicted with a clean lancet, into which the infected point of the instrument is to be introduced, and managed as above.

Infection contained between plates of glass, should be mixed carefully with the smallest particle of water, taken upon the point of a lancet, so as to be made into a perfect paste; and a few slight scratches being made with a lancet, it is to be rubbed into them with the precautions already mentioned.

Dr. Woodville remarks, that cow pock matter in a dried state, failing oftener than small pox to communicate the disease, does not depend upon its being of a more volatile nature, but upon its greater hardness and difficulty of solution; he therefore recommends us to be particular in mixing it accurately with the smallest particle of water before it is used; this caution seems very necessary, for vaccine virus when exposed to the air, readily dries and acquires a great degree of hardness. I have found the following method to succeed very well, viz. having made a few slight scratches, as already mentioned, I wipe off the blood, then apply the infected

part of the glass to the wounds, and rub it carefully upon them, so as to dissolve the virus perfectly in the serum which issues from the cuts, and lodge as much as possible of it in them. I have also succeeded by taking the matter off the glass in a dry state, and dissolving it perfectly in the serum upon the part.

Thread saturated with infection is recommended to be used by placing a small portion of it on an incision about the eighth part of an inch, and retaining it there by means of a mild adhesive plaister. I have no experience in this mode, but I should be apprehensive that the application of such a substance might in some degree interrupt the regular formation of the vesicle, or we may rupture the vesicle in removing the plaister. Dr. Barry found sore arms more frequent after inoculation with a thread, than in the usual way, which he attributes to the largeness of the incision made on such occasions: may not the thread in the wound acting as a foreign substance, contribute to this effect?.

When we are to inoculate several patients, we should dip the lancet in cold water after each

each operation. Lancets should be kept perfectly free from rust, as sore arms have been the consequence of neglecting this precaution.

If in consequence of the apparent failure of the first inoculation, we are to repeat the operation, it should be performed on the opposite arm, for, as we have already stated, it not unfrequently happens, that the matter first introduced, lies dormant for several days, and appears to be roused into action, as it were, by the activity of that last inserted; and if the pustules from the two inoculations are very near each other, the regular appearance of the disease may be confused, and a sore arm produced.

On the part of the person inoculated, some attention is necessary; he should not wear tight sleeves, or injure the part by pressure, friction, or any other means, take much exercise, or eat and drink without restriction, and his arm should be kept quiet. Dr. Waterhouse of Cambridge observes, and I think very justly, that the cow pock is thought too lightly of by physicians, who do not therefore enjoin the observance of any precaution in these particulars. He mentions, that

a patient of his was affected with violent head-ach, and stricture across the stomach, attended with considerable fever and slight delirium, brought on by walking six miles in a very hot day. Mr. Finch of St. Helens, informs us, that whenever the infection failed in those of a weak habit, he found it very useful to order a more generous diet, and to direct the mothers of such as were at the breast, to observe the same rule, after which it more readily took effect. In such cases, friction, by stimulating the absorbents, has been found serviceable; and Dr. Trotter recommends us to bathe the arm in warm water, and wipe it afterwards with a rough towel.

Patients under the influence of sulphur, very frequently resist the infection of cow pock. Of 88 inoculated with it in Reigate Poor-House, there were six who had been lately anointed for the itch, in none of whom did the infection take place. When it does take effect in such as are impregnated with sulphur, the progress, it is said, of the vesicle has been checked, so that after having once appeared, it continued stationary, or nearly so for several days.

Medical

Medical Treatment. The constitutional symptoms, when such do occur, are commonly slight and transient, therefore seldom require any remedy. The only internal medicine which I have ever seen necessary, is a purge, and this but seldom, where the patient is hot and restless, particularly if he be of a full habit, and strong, it will be found useful to exhibit an opening remedy: about the 8th, or from that to the 11th day, is the time that it will be most frequently necessary. Should other symptoms supervene, they are to be treated as if proceeding from any other cause. No preparation is required, nor are cathartics at all indicated either before or after vaccination: indeed such practice even after small pox, is thought by many experienced practitioners to be prejudicial.

It sometimes happens, that considerable inflammation of the arm is brought on by pressure, &c. in such cases, the frequent application of equal parts of vinegar and water, Aq. Lithargyri acet. com., or a solution of Sacc. Satur. will be found serviceable, it should be used quite cold. When the vesicle is broken before the 6th or 7th day, its contents effused,

ed, and there continues an oozing from the part, the areola probably will not be formed, nor will the antivariolous process take place in the system: such ineffectual inoculations are frequently followed, particulary in scrofulous children, and those subject to eruptions on the skin, by troublesome sores; we cannot therefore too often repeat, that the strictest attention is necessary to obviate these unpleasant symptoms, by guarding the vesicle from all injury, by pressure, scratching, or otherwise. When they do occur, an ointment composed of *Ung. Hydr. Nit.* part 1, and *Ung. Simp.* part 2, seems most useful in removing them.

Sometimes, however, although the pustule be torn, and part of its contents discharged at any early period, yet the effusion ceases after a short time, and the vesicle follows its regular course; should this not take place, cold water will frequently succeed in checking the discharge; if this proves ineffectual, more powerful astringents, as diluted vitr. acid, or acetite of lead must be had recourse to, either of which may be applied to the broken pustule, with the point of a probe; and

and a few minutes after, cold water may be used. We should prevent the linen from sticking in the pustule, as it would excite troublesome inflammation. When the ulceration becomes deep or extensive, a poultice of bread and milk, or a saturnine poultice is recommended. I never used either. If the sores become obstinate, resisting the means already mentioned, particularly if they have an ichorous discharge excoriating the neighbouring parts, escharotic applications, such as the red oxyd of mercury, mixed with any simple ointment, may be used.

About the 11th or 12th day, there sometimes comes on excessive inflammation in the arm; in such cases we are desired by Dr. Jenner to apply a single drop of the *Aq. Lithargyri acet.* upon the pustule, and having suffered it to remain there two or three minutes, to cover the surrounding efflorescence with a piece of linen dipped in the Aq. Lithargyri comp. the former may be repeated twice or three times a day, the latter as often as agreeable to the patient. Strong mercurial ointment has been used in such cases with advantage. Cold water is esteemed by many the best local application.

Should

Should the axillary glands inflame considerably, we may use cloths wetted with the Aq. Lithargyri comp. and kept constantly applied. If they shew a disposition to suppurate, this may be promoted by the usual means.

No application should be used warm.

None of the above remedies will be required once in a hundred cases. If proper attention be paid to the arm, the pustule will generally be formed into a scab, which in falling off, leaves the part underneath entire.

Comparison between the local affection of inoculated Cow Pock, and inoculated small pox. Their appearance differs materially in two particulars, 1st. in the *form*, and 2nd. in the *contents* of the vesicle. In the cow pock, the vesicle is circular or oval, according to the mode in which the operation has been performed, with a regular and well defined margin, the edges elevated, and the centre depressed, which is occupied by a dark crust, at first small, but gradually increasing, as already described. The pustule produced from small pox inoculation, is not circular, nor its edges well defined, but indented and ragged; there

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is rather the appearance of several pustules, at first distinct, but which soon run together, so as to give the whole a very irregular notched appearance. The small pox pustule is not depressed, but rather prominent, nor does any crust appear until the disease is far advanced. About the 5th day, the base of the vesicle is not, in general, surrounded by any inflammation as in small pox, but often assumes a white appearance. The vaccine pustule particularly when viewed through a glass, exhibits a cellular structure; the small pox has no such appearance. The former maintains the same character throughout its progress, viz. its edges elevated, regular, and well defined: whereas the latter becomes more and more irregular, owing to clusters of pustules running into it. The small pox often terminates in a sore of great extent and troublesome to heal, and there remains an irregular ill defined cicatrix. The cow pock vesicle, on the contrary, is gradually converted into a crust, which in falling off, leaves a circumscribed pit, corresponding with the size and shape of the vesicle; and unless rudely treated, no sore ensues. The fluid secreted in a vaccine

vesicle,

vesicle, is quite limpid and perfectly transparent; nor is it changed into a purulent matter, but is gradually converted into a hard crust. The small pox pustule, when fully formed, contains matter of the consistence of pus. The crust formed in the former, is smooth, hard, and semi-transparent of a dark brown or mahogany colour, not improperly compared to the transverse section of a tamarind stone, its margin elevated, retaining pretty nearly the regularity of shape and appearance of the vesicle itself. The small pox crust, is rough, scaly, friable, and quite opaque, of a light brown colour, its edges irregular, and centre rather elevated. The efflorescence surrounding the cow pock pustule, is regular, and its margin well defined, and there is commonly more hardness observable in the skin. In the small pox, it has more the appearance of a large irregular ragged blotch, bearing a more angry aspect, and copiously studded with minute confluent pustules. A pustular appearance is not observed in the cow pock areola.

Pustular Eruptions subsequent to Cow Pock. In cases where the arm through neglect continues

tinues in a state of ulceration for any length of time, there not unfrequently appears an eruption of pustules, which may be mistaken by inexperienced practitioners for small pox, whereas they occur from the absorption of matter into the system, as may happen from any sore if neglected; were such a case to happen to one of our antivaccinists, it would be brought forward as a striking instance of the inefficacy of cow pock. I saw one case of this kind, and I must confess it startled me a good deal, particularly when the child's mother informed me, that it had been some days before exposed to the infection of small pox, a little time however cleared up my doubts. In some part of Mr. Ring's work, a case is mentioned in which these pustules terminated in sores.

Practitioners will every now and then be called upon to decide, in cases of eruptions subsequent to vaccination; and here great accuracy and attention will be required to distinguish between small pox and other pustular diseases. A prolific source of error may be afforded, by confounding chicken pox with small pox. A patient who has gone

regularly

regularly through the cow pock, may be seized with an eruption of pustules, which through ignorance or design, may be termed the small pox, when in fact the disease was varicella. The late Dr. Heberden, in his very excellent dissertation upon chicken pox, in the first Vol. of the Med. Transactions, says, he has not seen this disease confluent, or with a large crop of pustules; for that the greatest number he ever saw, was about 20 on the face, and 200 over the rest of the body; that the constitutional symptoms are very mild, and that the vesicles are filled with a colourless or serous fluid, and the rapid progress to a state of maturity, or the rupture of them, may in general serve to distinguish the two diseases. However, we are well assured that the vesicles sometimes contain a puriform fluid, that they are frequently more numerous and confluent than already mentioned; and that the constitutional symptoms are at times more severe than Dr. Heberden seems to think. He however allows a similitude to exist between the two diseases, and even acknowledges that they may be mistaken for each other, which he says happened

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to Morton and others ; and hence he supposes that children have been inoculated with chicken pox instead of small pox. Vogel and other writers speak of varicella as a spurious kind of small pox ; such an opinion, however, could be easily refuted. Dr. Cullen thinks that medical men have been often deceived by the chicken pox, from its assuming the appearance of small pox,and hence he says, it was imagined that the same person had the small pox twice. Heberden allows that cicatrices are sometimes left after varicella, which however is denied by Dr. Cullen. It is absolutely necessary to be very accurate in the diagnosis of these two diseases, otherwise we shall be guilty of errors highly injurious to the reputation of cow pock. The idea of varicella never being a severe disease, has been productive of much mischief. Ring records several instances of chicken pox being mistaken for small pox. And Dr. Macdonald cites many examples of the same error having been committed, even by men of eminence. I well recollect some myself, where the chicken pox was communicated by inoculation, instead of the small pox.

A greater

A greater degree of itching attends varicella, at the time of its eruption than variola, in which that symptom seldom occurs in any great degree till suppuration has taken place, hence in varicella the pustules are early broken and seldom assume a purulent appearance.

We should here also take notice of a well known fact, viz. that eruptions very similar to small pox sometimes originate in other causes. "I have," says Mr. Ring, "known pustules, when produced by external applications, the Herpes Miliaris and other diseases, so nearly resemble the small pox, as not to be distinguishable by their appearance from that disease."

CONCLUSION.

Having thus, according to the plan, which I proposed, detailed the principal facts and opinions relative to vaccination, and offered such remarks as were naturally suggested by the subject, I shall conclude this Essay with a few general observations.

The universal and rapid diffusion of cow pock inoculation, and the uniform success which

which has attended its progress, through most parts of the world must impress upon the unbiassed mind the strongest conviction, that the applause with which it has been every where received, is deserved. I have judged it expedient to give a general view at some length, of the dissemination in different countries of this valuable discovery, and to recount the opinions and practices of the most eminent men, who have distinguished themselves in its cause, in the hope that my countrymen may thereby be roused to greater exertions, and may be sedulous to avoid the reproach, that the inhabitants of any part of that Empire which has given birth to the Author of this blessing, should be supine in availing themselves of its benefits. The Royal Jennerian Society in their last Annual Report, dated March 5th, 1805, thus emphatically express themselves. "There is not a country in Europe which has not borne testimony to the merits of this great discovery. It is pervading with success the immense population of Asia, penetrating the regions of Africa, and is cordially embraced by the Indians in America. If this concurrent opinion of an applauding

and

and grateful world be not sufficient to satisfy the doubts of every one, then we fear that no evidence will be sufficient."—And again, " Humanity and Benevolence are of all countries, and strangers to national hostility: and therefore we rejoice to learn (and hope that it will stimulate our own countrymen) that the exertions of the French Nation have been extraordinary in promoting vaccine inoculation, particularly in Paris, where a society is formed which has inoculated 60,000 persons in the last three months."

From the same authority we are enabled to state with infinite satisfaction, that since the introduction of vaccine inoculation, the deaths by small pox in London have diminished in an extraordinary degree.—These in 1804 were only 622, whereas an average for 50 years within the bills of mortality was 2018, and within two months preceding the report before cited, only 42 died. How happy were it, could a similar account be given of the mortality in this Metropolis!

What the number may be of those who have hitherto undergone the cow pock, in all quarters of the globe, it is impossible to say,

say, but they were long since estimated at two millions. And if we may judge from the accounts received in particular from India, they will soon exceed calculation. The exertions of the British Government in that country have been highly meritorious. Returns, already detailed, have been communicated to the Royal Jennerian Society of no less a number than 145,840 persons who have undergone vaccine inoculation in Bengal without any casualty, a statement whereof has been drawn out and translated into the several native languages, under the sanction and at the expence of Government, and dispersed throughout the whole extent of their territories.

The ardour with which the new practice was adopted in India, may in a great measure be attributed, (as mentioned in the foregoing treatise), to the confidence inspired, by a declaration of many medical men in England, in its favor which Mr. Ring procured and sent out. Such declarations have been numerous and frequent in Great Britain and elsewhere, and it cannot fail to excite surprise and regret, that in Ireland no medical men, except those who preside over

the Cow Pock Institution of this city, have come forward *collectively*, to pledge themselves, to their fellow citizens for the safety and efficacy of Vaccine.—Such a guarantee must have the greatest weight with a discerning public, and it is one, which in my opinion, the public has a right to expect.

Some of my readers may perhaps think, that I have made too many subdivisions of the subject, and been unnecessarily minute in description,—but let it be remembered, that by attention to minutiæ alone, can an accurate knowledge be acquired in any department of Science. Paradoxical as it may seem, the milder any disease is, the more liable it is to be misunderstood or mistaken. Violent disorders are marked by strong and prominent features, which indicate at once their nature, and leave an indelible impression on the memory. But when the diagnosis depends upon symptoms apparently trifling, a scrutinising eye, and studied reflection are requisite to form an accurate conception of any case. No man's sphere of observation, however enlarged, can be supposed to comprehend, all or even the principal varieties

rieties which may occur in any complaint, it is necessary however, in a practical treatise to describe as many of these as possible, to obviate embarrassment, when met with; and I flatter myself, that the greater number of such as have hitherto been observed in vaccine practice will be found arranged under one or other of the sections in the foregoing pages. Had many other diseases been spread abroad with equal rapidity, and the communication among professional men, been as general and immediate it is more than probable that greater irregularities would have been remarked, and the discription of them been necessarily more prolix; and it is to be lamented, that correspondence is not more frequent at all times among men of science: we might then hope that the obscurity which envelops many disases long known among mankind, would be dispelled, thus we should not be embarrassed with such contradictory accounts of their nature and treatment that no practical inference could be drawn from them. The cow pock has experienced a happier fate, yet even the most intelligent and careful practitioners, were frequently

quently deceived by its appearances, in the commencement, and those who, don't think it worth their while to bestow any labour in acquiring information on the subject must still be frequently in error. Dr. Tierney of Brighton, informed Mr. Ring, that he had sent some virus on quills to the south of Ireland, where, he adds, "*The Irish practitioners, it seems, had never seen a true case of cow pock till then, although inoculating for three years!*" Lamentable indeed! that although many eminent practitioners in Dublin and elsewhere, had during the above period, been inoculating with fluid received, direct from Dr. Jenner, they had never been so fortunate as to produce, *one genuine* pustule until in a happy hour, a supply from the *pure source at Brighton*, reached a corner of the land.—Erroneous however as we know this representation to have been, yet foreseeing the dreadful consequences, that would inevitably ensue had it been founded in fact, and considering that a culpable inattention alone, on the part of those who in this statement, thought proper to identify themselves with

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the Medical public, could have occasioned such failures, let us be doubly assiduous in the discharge of our professional duty, that no neglect or want of information on our part, may lend the colour of truth to so serious an imputation. A spurious disease is easily propagated, one small deviation engenders another, until the original nature of it is entirely changed. Let us not however be deterred by the multiplied varieties which occur in the practice of Vaccination, nor be apprehensive that it is encompassed with insurmountable difficulties, for to sum up all in the words of Jenner. "A little practice in vaccine inoculation attentively conducted, impresses on the mind the perfect character of the vaccine pustule; therefore when a deviation arises, of whatever kind it may be, common prudence points out the necessity of re-inoculation, first, with vaccine virus of the most active kind, and secondly, should this be ineffectual, with variolous virus. But if the constitution shews an insusceptibility of the one, it commonly does of the other."

May, 1805.

P. S. Dr. Patterson, of Londonderry, (who introduced the new Practice into the north-west of Ulster,) has favored me with some communications, relative to the cow pock. He is of opinion, that vaccinated subjects are considerably affected, by *Atmospherical influence*. He says, he has observed a constitution of the air, which might be denominated the *Cutaneous*, during which, patients passing through cow-pock, seemed more or less disposed, by the appearance of concomitant eruptions, to partake of the general disposition to cuticular irritation. Some symptoms also, seemed to depend upon the state of the weather, at particular times. He has reported several cases, as illustrative of this doctrine. In one, a morbillous eruption was observed. That it was not really measles, was proved, by the patient being severely attacked with that disease two years afterwards. In another, an anomalous pustular affection, seemed somewhat to modify the vaccine. Scabs, and other cutaneous complaints, resembling varicella &c. occurred in others,—but which did not, according to Dr. Pattersons observations, either materially

materially interrupt the progress of the cow pock, or leave any doubt upon his mind of the patients having had the genuine disease. Some were affected with severe sickness and vomiting. How far these effects are referrable to the causes assigned for them, and whether or not eruptions observed by other practitioners, may be in any degree attributed to a peculiar state of the air, I shall not attempt to determine. The opinion respecting the influence of the atmosphere in the production of diseases, has been maintained and opposed, by very learned and ingenious Men on both sides of the question ;—but the attention which this gentleman has paid to Meteorological observations and the effects of climate, certainly entitles his opinions to respect, and it is to be wished, that others may by similar investigations, endeavour to elucidate this part of the subject.

Dr, Patterson mentions a case, wherein the inoculation on the arm entirely failed, but a pustule appeared on the wrist, which ran its course, with characteristic exactness.—The patient no doubt, was as well secured against small pox, as in any other instance.

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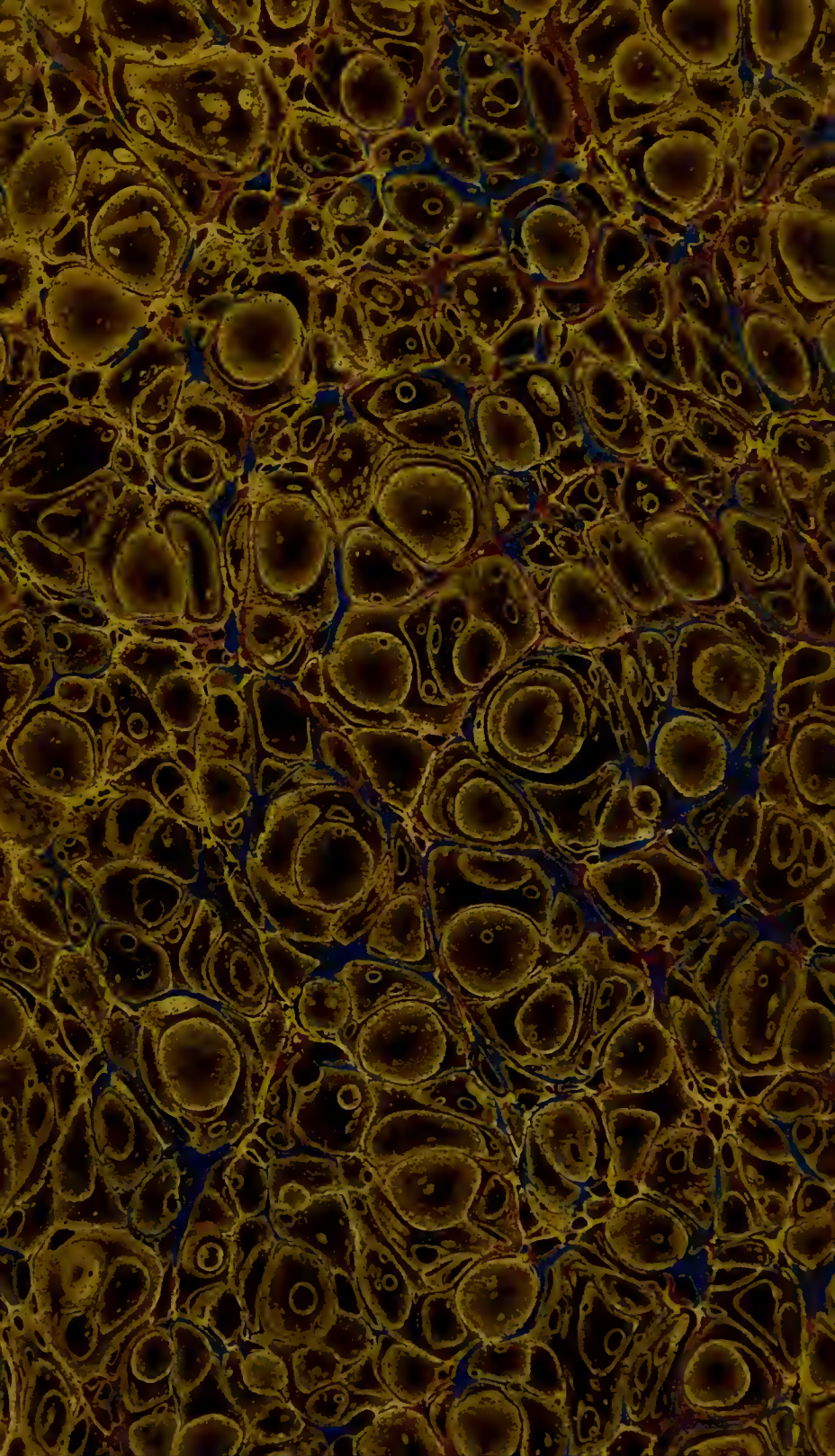
This accidental insertion was occasioned, by the child's wrist striking against the edge of the lancet, while the Doctor was withdrawing it after the operation, and the pressure which he made for a few minutes with his finger, and a linen bandage which he applied, to heal the wound, contributed materially, he thinks, to promote the absorption of the virus.

Late accounts from India contradict the evidence formerly adduced, of cow pock having been long known and practised there. The mention of it in a Transcrit MSS. is proved by Mr. Shoolbred to be an interpolation.—The veneration for the cow, instead of promoting, has retarded the inoculation among the Hindoos. Hence Mr. Blaquiere regrets, that it was not introduced under some other name. This gentleman Mr. Forster, and Mr. Bently, have examined several Medical MSS. and books many of which treat largely of small pox under the names of *Brussunt and Sitala*, but contain not the most distant allusion to Cow Pock.

F I N I S.